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CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ADDRESSES AND ORIGINAL ARTICLES

Thrombo-angiitis Obliterans. By Prof. E. D. TELFORD, F.R.C.S. 549
Medical Treatment of Non-malignant Pyloric Stenosis in Adults. By T. IZOD BENNETT, F.R.C.P. 552
A Review of Gold Therapy. By W. S. C. COPEMAN, M.R.C.P., and W. TEGNER, M.R.C.P. .. 554
Striæ Atrophicæ Cutis. By D. B. ROSENTHAL, M.R.C.P.—(*Illus.*) 557
Tryptophane Reaction in Cerebro-spinal Fluid in Diagnosis of Tuberculous Meningitis. By J. SPILLANE, M.R.C.P. 560
Anæsthesia for Intracranial Operation. By P. AYRE, M.R.C.S.—(*With charts*) . 561

CLINICAL AND LABORATORY NOTES

Vitamin B_1 and Diphtheria. By B. A. PETERS, M.D., and R. N. CUNNINGHAM, Ph.D. 563
Osteomyelitis. By WALTER BROADBENT, F.R.C.P. .. 564
Leptospiral Jaundice Occurring Naturally in a Guinea-pig. By NEIL MASON, M.B. 564

MEDICAL SOCIETIES

Society of Medical Officers of Health: Whooping-cough 565
Medico-Legal Soc.: Silicosis 566
British Psychological Society: Sex Education 567
Royal Society of Medicine: Epidemiology of Weil's Disease 569
Manchester Medical Society 570
Liverpool Medical Institution 571
Royal Medico-Chirurgical Society of Glasgow 571

NEW INVENTIONS

Extension Apparatus for Forearm and Wrist Fractures. By R. SHACKMAN, F.R.C.S.—(*Illus.*) . 572

REVIEWS AND NOTICES OF BOOKS

Nostrums and Quackery. By A. J. Cramp, M.D. .. 573
Malaria in Europe. By L. W. Hackett, M.D. .. 573
Tissue Immunity. By R. L. Kahn, D.Sc. 573
Minor Surgery. By F. Christopher, M.D. 574
Elementary Manual of Physiology. By R. Burton-Opitz, M.D. 574
Human Physiology. By P. G. Stiles 574
Management of Obstetric Difficulties. By Paul Titus, M.D. 574
British Journal of Children's Diseases 574

LEADING ARTICLES

SPECIFIC PROPHYLAXIS OF INFLUENZA 575
BORSTAL TRAINING 575
MEDICINE STAMP DUTIES .. 576
PROTAMINE ZINC INSULIN 577

ANNOTATIONS

Explosions in Operating Theatres 578
Effect of Posture on the Electrocardiogram 578
Can Impaction of the Third Molar be Predicted? ... 579
Conservative Treatment of Acute Infections 579
Subacute Combined Degeneration of the Spinal Cord 580
Bacteria Chased into Blood Cultures 580
Pneumatic Transference of Radium 580
Non-rheumatic Chorea ... 581
Studies on Chronic Arthritis 581
Freedom for Research 581

PRINCIPLES OF MEDICAL STATISTICS

X—The Coefficient of Correlation.—(*With charts*) . 583

SPECIAL ARTICLES

Hunter the Great Researcher. By LORD HORDER 587
Medicine and the Law: Counting of Swabs 589
Paris: Early Diagnosis of Undulant Fever 590
Medicine Stamp Duties Report 591
Parliamentary Election for the Combined English Universities 592
Medical Appointments to the King 608
Infectious Disease in England and Wales 592

GRAINS AND SCRUPLES

From a Rusticating Pathologist (II) 593

CORRESPONDENCE

Manipulative Surgery (Mr. Timbrell Fisher, F.R.C.S., Mr. Blundell Bankart, F.R.C.S.) 595
Protamine Insulin (with Zinc)—Suspension (Allen & Hanburys Ltd., Boots Pure Drug Co. Ltd., The British Drug Houses Ltd., Burroughs Wellcome & Co.) 596
Treatment of Fracture of the Neck of the Femur (Mr. W. Gissane, F.R.C.S.) 596
Oxygen Administration (Dr. Argyll Campbell) 597
Basophil Pituitary Carcinoma (Profs. H. Cohen, F.R.C.P., and J. H. Dible, F.R.C.P.) 597
Artificial Pneumothorax on Statistical Trial (Dr. H. Roche) 597
Hormone Treatment of Undescended Testis (Dr. Pearse Williams, Drs. P. M. F. Bishop and A. C. Hampson) 597
University of London Medical Graduates Society (Dr. Dorothy Hare and others) 598
Oxygen Tents (Dr. E. P. Poulton) 599
Mental Disorder and Endocrine Activities (Dr. T. D. Power) 599
Ritual Purgation (Dr. Stella Churchill) 599
Treatment of Streptococcal Infections (Mr. J. Whittingdale, F.R.C.S.) 599

THE SERVICES

Royal Naval Medical Service—Army Medical Services — Royal Army Medical Corps — Royal Air Force 606

PANEL AND CONTRACT PRACTICE

The Drug Bill—A Satisfactory Compromise — "Outside the Scope" .. 600

OBITUARY

Sir Henry Jackson, M.B.—(*With portrait*) 601
Maj.-Gen. Thomas Martin Corker, M.D. .. 601
Frederick Ransom, M.D. .. 602
Alexander Manuel, M.R.C.P. 602
Noel Charles Beaumont, M.R.C.S. 602
John Homer Miller, M.B. .. 602

PARLIAMENT

Exchequer Grants and Local Health Services .. 603
Notes on Current Topics: National Health Insurance Bill—Factories Bill 603
Question Time: Industrial Workers and Dermatitis 604

MEDICAL NEWS

University of Oxford 607
University of Cambridge .. 607
Royal College of Surgeons 607
Increased Use of Milk 607
Mental After-Care Assoc... 607
British Inst. of Philosophy 607
Institute of Hospital Almoners 607
League of Nations Health Administration 608
An Institute of Sanitary Science 582
Federation of the Health Resorts of France 582
King's College Hospital .. 586
Fellowship of Medicine ... 600

NOTES, COMMENTS, AND ABSTRACTS

The Sailor Looks at the Surgeon 611
Medical Treatment of Hepatitis and Cholecystitis .. 611
Free Convalescent Homes 611
Colour-Blindness and Hæmophilia 611
Advice on Children 611
A Bedside Book 612
A Useful Magnifier 612
Obstetrical Narcosis with Evipan 612
Naval Cookery 612

Births, Marriages, Deaths 608
Medical Diary 609
Appointments—Vacancies 610

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ADDRESSES AND ORIGINAL ARTICLES

THROMBO-ANGIITIS OBLITERANS *

BY E. D. TELFORD, B.Chir. Camb., F.R.C.S. Eng.
EMERITUS PROFESSOR OF SURGERY, UNIVERSITY OF MANCHESTER

(From the Department of Clinical Research in Disorders of the Autonomic Nervous System, Manchester Royal Infirmary)

WE owe the term thrombo-angiitis obliterans to Buerger, who published his very complete and documented account of the condition in 1924. The disease had of course been recognised long before, and sporadic cases had been described by v. Winiwarter, Parkes Weber, and others. A variety of names—endarteritis obliterans, juvenile and presenile gangrene—had added to the confusion. Buerger's title, which has come into general use, is based on his observation that the condition is by no means restricted to arteries and that phlebitis plays an important part in a proportion of cases (in my experience about 25 per cent.), and may be antecedent or intercurrent in the development of the disease.

Thrombo-angiitis obliterans begins mainly in the medium-sized blood-vessels of the limb, such as the anterior and posterior tibials. From these points it spreads, usually slowly but sometimes by acute exacerbations, both upwards and downwards; it may also develop in patches separated by intervening stretches of normal artery. In certain cases in younger men it appears to begin in the digital arteries of the foot. It is rare in the arms and I have never seen it there until it has made grave progress in the legs. It has been described in other arteries—e.g., the spermatic; one of my patients died from involvement of the inferior mesenteric artery, and in another, who died at the age of 26 from angina, the changes found in the coronary arteries were histologically identical with those of thrombo-angiitis obliterans.

The disease is not only liable to exacerbations but is very variable in its course in different patients. Attempts have been made to classify it into groups based on the rate of progress, but in a large series it is doubtful if such grouping can be usefully or even justifiably done. One of my patients had the disease for 38 years and suffered no more than a trivial loss of portions of two toes during this long time. Another died because the thrombosis ascended to his inferior mesenteric artery within seven months of the onset of claudication; and between these cases there are innumerable variations. Needless to say it is this variability which renders so difficult the judgment of therapeutic values.

Although as yet of unknown origin, the disease has the histological features of an inflammatory lesion—thrombosis occurs and is followed by organisation of the clot. This, although often alleviated to some extent by canalisation of the fibrous tissue, causes the grave embarrassment of the circulation to which the symptoms are due.

As regards sex-incidence, every writer has been struck by its rarity in women. Among several hundred cases I have seen but three in women, and Buerger's figures show no more than three in five hundred. This very striking incidence must of course have a bearing on causation but so far its true significance has not been found; neither is it clear why the disease should be found so often in the lower extremities. Differences of tone no doubt exist between the arteries of the legs and arms but no sufficient explanation of the predilection of the disease for the legs is forthcoming. It is of interest to note however that in epidemics of ergotism in Eastern Europe the lesions are found more often in men and more usually in the legs.

Stress was laid by earlier writers on the predominantly Jewish racial origin of the patient, but wider experience has shown the fallacy of these statements. In my own series there is no greater proportion of Jews than one would expect from the general population of Manchester. Moreover, large series of cases have been recorded as occurring in the natives of China and Siam. It is not very easy to determine the age of onset of the disease because we do not usually see cases until claudication has become severe and it is certain that the lesion has been present for a long time, possibly some years. The majority of cases are found in the decade 30–40 years, but a considerable number occur before this age. In one remarkable case in which the diagnosis of thrombo-angiitis obliterans appeared the only possible one, the symptoms began at the age of 8 years when it was noticed that the boy could not play with his fellows owing to crippling pains in the calf on exertion. The condition slowly worsened and at 19 he had lost the half of the right foot and all toes of the left foot from gangrene.

Pathology

The microscopical changes have often been described and there is general agreement as to the findings. It is worth while to point out that for the purpose of histological examination the material should not be chosen from a limb which is the site of infection. The changes induced by a superadded infection are more widespread than is generally recognised and may obscure the picture.

The process is essentially one of gradually increasing fibrosis. This is at once apparent when the attempt is made to dissect out material for examination. It is not uncommon to find that the neurovascular packet in the popliteal space is embedded in a mass of fibrous tissue so dense that separation into artery, vein, and nerve is no longer possible. The artery is itself converted into a firm solid rod. This fibrosis of the artery may be patchy and limited to a definite stretch of the vessel—e.g., the popliteal artery may be occluded but the superficial femoral may be patent, or the posterior tibial may be destroyed whilst the anterior tibial shows little or no change. The fact that the disease may be extreme in one section, shading off to the normal above and below, gives one the opportunity to study the changes in various degrees of their development. At the outset there is a lymphocytic invasion of the coats of the arteries and veins. The cells are replaced by fibrous tissue and new vessels are seen extending into the media from the adventitia. Whilst these changes are proceeding clot is deposited upon the intima and the process of organisation of this clot begins. Whilst organisation is taking place, collections of lymphocytes arranged in a fashion suggestive of tubercles may be seen. These together with the rest of the tissue are gradually replaced by fibrous tissue. This fibrous tissue is recanalised to some extent, the small channels showing an endothelial lining and in some cases a thin coat of smooth muscle. Ultimately the newly formed fibrous tissue in the media and adventitia appears to become denser and to contract. This

* A lecture delivered for the University of London at St. Mary's Hospital medical school on Feb. 23rd, 1937.

may be a contributory factor in the onset of gangrene by its pressure upon the connective tissue and channels in the lumen. The histological examination shows that the condition is more widespread than the clinical picture would suggest, both superficial and deep veins and arteries being affected; but all the vessels in one region are not equally affected.

The veins show similar changes whilst the nerves show the changes of a secondary involvement in fibrous tissue.

POSSIBLE CAUSES

Whilst there is general agreement on the histopathology, it is very different when one comes to consider the cause of these grave structural changes. It may be said at once that the cause is at present unknown and all that one can offer is a catalogue of the various suggestions which have been made by different observers.

It is plain that *syphilis* has nothing to do with the disease. Among over 200 of our cases the Wassermann reaction was positive in but 3.

Tobacco in the form of excessive cigarette-smoking has been incriminated by many writers. Paper and tobacco have alike been blamed. There is a certain amount of experimental evidence in favour of this view. It has been shown that when tobacco is smoked there is a drop in the cutaneous temperature of the digits, and that this is due to a toxic agent is shown by the fact that the drop does not occur if the smoke be filtered. Further, the number of patients who admit to smoking cigarettes in excess of say 15 a day appears considerable in a series of cases. One can only say that tobacco may be a contributory factor but is certainly not the direct and only cause. A number of cases have been seen in both men and women who have never smoked. In one of my cases the disease occurred in a most severe form, ending in a double amputation within three years of its first symptom, in an athlete who for reasons of training had never smoked.

Our Manchester cases include a large number of men of first-rate physique who have been keen athletes in their youth, and there appears also to be an unusual proportion of men who have followed occupations—e.g., navvies, slaters, and other outdoor workers—in *wet and cold*. But these can be no more than possible contributory causes. Routine examination of the blood for sugar, urea, calcium, phosphorus, and for coagulability time has yielded no clue.

A point worthy of inquiry and one which we are following up is the possible existence of a similar condition in horses.

SPASM OR INFECTION?

In the present absence of exact knowledge of the cause it may be more profitable to discuss the question on broader lines and to begin with the problem of whether it is due to spasm or infection.

This question is far from academic; it is very real, since on the answer will depend the curability of the disease by section of the sympathetic supply to the vessels. If the disease is truly spastic, the operation of sympathectomy will not merely alleviate but should cut short further progress. If on the other hand the condition is toxic or infective, division of the sympathetic supply will not arrest the disease though it might be of real value in bettering the condition of the limb by dilating such collateral paths as are still healthy.

In favour of the spastic theory the statement is made that on exertion the limb is blanched. This phenomenon is due, I believe, to the muscular action causing removal of blood to take place more quickly than blood can be replaced by the embarrassed arteries. Elevation of the limb will produce the like result without any question of spasm. It is possible also to adduce arguments from cases of the Raynaud phenomenon, cervical rib, and ergotism which tend to show that arterial spasm if sufficiently severe and prolonged will cause thrombosis.

The arguments in favour of a toxic origin are much more weighty. The associated phlebitis which in some patients appears to precede the onset of arterial disease suggests a toxic origin. In this respect the relation of thrombo-angiitis obliterans to the migrating forms of phlebitis needs fuller investigation.

Rabinowitz (1923) claims to have isolated a Gram-negative rod-shaped organism and to have produced by injection of the bacillus the same lesion in the ears and feet of rabbits as occurs in the human leg. These findings, however, have not to my knowledge been confirmed by other observers.

Perhaps the most important evidence on the question of a spastic or toxic origin of thrombo-angiitis obliterans is that obtained by careful follow-up during a number of years of those patients who have been treated by sympathectomy. These I will deal with under the head of results, but it is now evident that excellent as are the results of sympathectomy in many cases there are some in which one can only conclude that the disease has progressed. It is from these that I am driven regretfully to the conclusion that the disease is toxic rather than spastic.

It is also worthy of note that an examination of many hundreds of sections taken from the material removed at ganglionectomy operations on these cases, controlled by many sections taken from normals at various ages, shows nothing abnormal and certainly yields no evidence of any pathological alteration in the sympathetic chains. The observations, however, concern merely the pathway; there may none the less be some lesion of the higher centres.

Symptoms

Although a few of the more intelligent and observant patients may give a history of coldness of the feet and may have noticed blanching after walking, the average patient comes under observation on account of claudication. His walking distance may be of the order of a quarter of a mile, when walking at his usual pace on the level. It will be shorter if he walks quickly or uphill. His pain is usually in the calf but may be in the sole of the foot. This latter symptom is more common in the younger men and indicates that the disease is more severe in the small arteries of the foot. These younger patients exhibit blanching alternating with cyanosis which may lead to a diagnosis of Raynaud's disease. If these cases are followed up they are found to develop into true and severe thrombo-angiitis obliterans although in their earlier stages they have presented what is best regarded as one type of Raynaud phenomenon. In these cases a good pulse may be felt in the posterior tibial or even in the dorsalis pedis arteries. Usually, however, when a patient comes for examination no pulse can be felt in the posterior tibial or dorsalis pedis, and seldom in the popliteal; but almost always there is a good pulse in the common femoral artery. It is only in severe and late examples of the disease that the common femoral artery is thrombosed.

As the disease progresses the walking distance is further reduced and rubor begins to make its appearance. This rubor is most evident in the dependent

position and disappears on elevation of the limb above the heart and in walking. In the course of time the patient begins to suffer when at rest in bed from aching or actual pain, usually in the feet. This he discovers is eased by the dependent position and by cold, and he usually learns to hang his leg out of the bed to alleviate it.

Eventually some form of "trophic" trouble is likely to arise. The most common type is an infection by the side of the nail of the great toe. A very persistent onychia results, and in many patients the nail has already been removed, with the result that a chronic, very indolent ulcer is left over the nail bed. This shows no tendency to heal and makes no attempt to develop a new nail. The condition of the foot is now very precarious and any slight accident or further infection may precipitate the terminal gangrene. By no means does every case end in gangrene; it is however a common ending and by some writers has been put as high as 50 per cent.

The condition of rest-pain with its worry and loss of sleep produces much deterioration in general health and in the later stages there are found some of the most worn and emaciated patients that it is one's misfortune ever to see.

Two points strike one in the examination of a large series of cases. Firstly, true thrombo-angiitis obliterans is always bilateral but the patient will usually stoutly aver that only the one leg gives him trouble. This is because the worse leg invariably pulls him up before the other leg has reached the stage of claudication. Clinical examination and above all the claudicometer (Simmons 1936) will show that the supposedly good leg is but little better than the one blamed by the patient. Secondly, great reserve should be used in giving a prognosis of the less involved limb. It is quite common to find that this limb deteriorates more rapidly than its fellow and is likely to prove eventually to be the worse of the two.

Diagnosis

It is of course only in recent years that the diagnosis of thrombo-angiitis obliterans has been made with confidence. It is therefore not surprising to find that many of these cases have had prolonged treatment for rheumatism, fibrositis, and very commonly for flat-foot. It should be realised that when a patient of middle age begins to complain of pain in the lower limb after exertion careful investigation should be made into the condition of the peripheral circulation.

There are however three vascular lesions which may be mistaken for thrombo-angiitis obliterans. They are arterio-sclerosis, the Raynaud phenomenon, and the embolic exacerbations of arterio-sclerosis. Confusion is most frequent between thrombo-angiitis obliterans and arterio-sclerosis, especially as the symptom of claudication occurs in both diseases.

In the differential diagnosis, age is an important factor. A diagnosis of thrombo-angiitis obliterans may be made with some confidence in patients up to 45 years or even 50, but from 50 to 60 such a diagnosis is doubtful, and after 60 it is very unlikely. A routine clinical examination should be made in all cases for evidence of arterio-sclerosis and a radiogram taken of the popliteal arteries.

Since calcification plays no part in thrombo-angiitis obliterans the slightest evidence of arterial shadow or flecks of lime in the radiography should put the case in the arterio-sclerotic group, and I have admitted no such case to my series of cases.

As already mentioned the Raynaud phenomenon in the feet of a young man should arouse grave suspicion. Such a case is likely before long to show thrombosis of the digital arteries, and will develop into a quite definite and usually severe thrombo-angiitis obliterans. There is thirdly a type of case of which we have had five instances in our clinic; it may be mistaken for thrombo-angiitis obliterans. The patients are men between 40 and 50 years of age who whilst quite unaware that they have any trouble with their legs are suddenly seized by very severe pain in the calf. The foot is stone-cold and blanched but in the course of a few days some improvement is seen, walking becomes possible, and the man may return to work—but the circulation in the foot does not return to normal. It seems likely that these cases are embolic in origin, the embolus having been derived from some patch of atheroma or calcification in a vessel in or proximal to the popliteal. That they are not true thrombo-angiitis obliterans is evident from the fact of the sudden very painful onset of pain and from the observation that the opposite leg is apparently normal.

Treatment

A mere list of the treatments which have been tried in thrombo-angiitis obliterans would be of formidable length and there is little point in mentioning many of them—they have only too often fallen by the way after an introduction more optimistic than warranted by results. Broadly speaking the various methods of physiotherapy are purely palliative and not without danger in limbs whose vitality is slender. The production of vasodilatation by foreign proteins is also a merely temporary expedient; if these substances are used in really efficient doses the patient suffers so great a malaise that he commonly gives up the treatment after a few attempts.

Two new methods at present on trial are of interest—the intravenous-saline and the negative-pressure (Pavaex) method. I have no personal experience of these.

There can be no doubt that in our present ignorance of the cause of the disease the operation of section of the vasoconstrictor fibres is the most reasonable. Sympathectomy will produce a lasting vasodilatation in the lower extremity, and if the disease has a spastic origin it should arrest its progress, but if the disease is toxic and not spastic it may nevertheless help by dilating such collateral channels as still remain healthy. Obviously it will do this much better in the earlier cases than in the more advanced ones with widespread thrombosis. The varieties of sympathectomy practised have been chiefly two: (1) perivascular stripping, and (2) lumbar cord ganglionectomy.

Perivascular stripping has been practised by many surgeons, and although it appears to be anatomically unsound it does, according to the reports of reliable surgeons, produce some degree of distal vasodilatation. Such a result is however both incomplete and evanescent. If an attack on the vasoconstrictor fibres is held to be good treatment surely it is better to carry out a precise and complete operation by section and removal of a portion of the lumbar ganglionated chain. These considerations led Stopford and myself to decide early in 1931 that we would submit a series of cases of thrombo-angiitis obliterans to lumbar cord ganglionectomy and observe the results by a very frequent follow-up over a number of years.

The operation consisted of a free removal, in almost every case bilateral, of the lumbar ganglionated cord. It is difficult to speak of definite anatomical limits because, as every surgeon who has worked in this

region is aware, the anatomical arrangement of these cords is subject to very wide variations. The most that one can say is that as a routine we have excised that portion which corresponds to L.2, L.3, L.4 ganglia.

The total number of patients submitted to this operation for thrombo-angiitis obliterans is 112. In only 5 of these cases was the operation unilateral, and this was only because one limb had already been amputated. The remainder were all bilateral, and the ganglionectomy was carried out by transperitoneal approach under spinal anæsthesia. There has been no operation mortality in this series.

RESULTS OF LUMBAR CORD GANGLIONECTOMY

I have on two previous occasions with Prof. Stopford (1933, 1935) published results of lumbar cord ganglionectomy in thrombo-angiitis obliterans. These results show that in half the cases the results may be classified as "good" inasmuch as though claudication is seldom cured the walking distance has increased, rest-pain has been abolished, and onychia healed and the men are back at work. In a quarter of the cases the result can only be described as "fair." These patients say they are better for the operation but the clinical improvement is not great, and this is especially true of claudication. In the remaining quarter the result is not satisfactory; some have since died and in the rest amputation has been necessary. It is, however, only fair to point out that in these patients it has been possible to carry out successfully partial amputations of feet or removal of the leg with a seven-inch tibial stump whereas without the sympathectomy, amputation through the lower third of the thigh must have been done. A recent review of 98 cases confirms these previous findings.

The present inquiry is however more immediately concerned with the question as to what effect lumbar cord ganglionectomy has on the progress of the disease. If an estimate of this kind is to have any value it is essential that the diagnosis be as certain as is possible and that a sufficient length of time shall have elapsed since the operation. I have, therefore, selected only such cases as presented symptoms before 45 years of age and only such as have been operated upon since for not less than three years. The inquiry is thus confined to undoubted cases in all of whom from three to six years have elapsed since operation. The number of these is 22, all of whom have recently been seen and their present condition carefully estimated. Of the 22, 16 remain well and it is certain that the disease has made no further progress. On the other hand 6 show some degree of deterioration and display further evidences of the disease. Two show recurrent attacks of phlebitis, which suggests that a toxic factor is still at work, and 4 have required some measure of amputation, in 2 cases of toes only and in 2 others at the "site of election."

From these observations I conclude that the main and probably only benefit to be derived from lumbar cord ganglionectomy is by the dilatation of collateral paths and not by the abolition of spasm. Disappointing as this conclusion is, it does not in the least weaken my contention that, up to the present, we have in sympathectomy the most hopeful of the many treatments which have been practised for this grave and distressing disease.

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THE MEDICAL TREATMENT OF NON-MALIGNANT PYLORIC STENOSIS IN ADULTS

By T. Izod Bennett, M.D., F.R.C.P. Lond.
PHYSICIAN WITH CHARGE OF OUT-PATIENTS, MIDDLESEX HOSPITAL, LONDON

Peptic ulceration responds well to treatment, but it is a very common condition and in spite of the success which is so often achieved there are many cases in which it is responsible for prolonged ill health and not a few in which it causes death. But it must not be assumed that the failures are the result of an imperfect method of treatment because they are often due to neglect in applying to an individual case the modifications in treatment necessary for success in that particular case. Regulation of the patient's diet is the most important of all factors in treatment, and the requirements of the individual vary so greatly that no uniform system of dietetics can be expected to secure more than a certain proportion of good results.

In a recent paper (1936) I ventured to write as follows: "It is absurd to lay down the same laws for the bank clerk, the labourer, the actor, the professional footballer, the market gardener and the society woman. Obviously the hours of activity and the food requirements of these people will vary enormously." I am convinced that the majority of the failures of medical treatment can readily be explained by neglect to meet the requirements and habits of the individual patient; there is no other disease in which the personal factor is of such great importance, and if peptic ulcer is not more successfully treated in 1937 than it was in 1927 it is because many physicians and surgeons still continue to adopt a fixed system of treatment without realising that though it may be excellent it must always require some measure of adjustment for every case to which it is applied. An extreme illustration of this has been afforded during the last two years by the transient popularity of the treatment of peptic ulcer by means of injections of histidine. With little or no evidence that this treatment had any value practitioners were persuaded to abandon nearly all dietetic precautions and to rely on a series of hypodermic injections as a method of curing this dangerous disease. The results have been so disastrous that the method is now rapidly sinking into oblivion; but it cannot be sufficiently emphasised that apart from ridiculous forms of treatment such as this a proper proportion of successes cannot be secured unless each case is judged on its merits and the diet and medicine are arranged in each case so as to secure the measure of gastric rest necessary to bring about permanent healing and health.

THE PLACE OF SURGERY

Pyloric stenosis is a complication of peptic ulceration which is usually best treated surgically. By definition a mechanical obstacle is present which must militate against the success of purely medical treatment, and it is obvious that if the obstruction could be easily remedied it would be well to relieve it in every case even if careful medical treatment were necessary afterwards. But in actual practice pyloric stenosis can seldom be relieved surgically except by a short-circuiting operation or by resection of part of the stomach or duodenum, and either of these operations is very serious. Gastro-enterostomy may

involve only a small immediate risk, but gastro-enterostomy invariably deprives the patient of that delicate control by the pylorus which is one of the fundamental functions of the stomach. Gastrectomy on the other hand is always a major operation, and against the fact that it often achieves the elimination of a permanently diseased area must be set the fact that it not only changes the mechanics of the stomach but deprives the patient of a considerable area of mucosa, the value of which has been revealed by all the recent work on the genesis of pernicious anæmia and kindred diseases. In spite of these considerations it remains true that pyloric stenosis usually calls for surgical treatment; the classical paper of Berkman (1923) favours this view and the discussion of the subject by Eusterman and Balfour (1935) indicates surgery as the treatment although considerable attention is given to medical measures, chiefly of a pre-operative nature. Crohn (1927) states that the treatment is pre-eminently surgical, and Rehfuss (1927) is only slightly less strongly in favour of surgery.

It is by no means always easy to determine whether gastric retention is the result of organic pyloric stenosis, but careful X ray examination will usually suffice to eliminate those cases in which gastric atony alone is responsible. Apart from loss of tonus the pyloric function may be interfered with either by disease of neighbouring structures or reflexly as the result of a large ulcer on the lesser curvature of the stomach. A six-hour residue in the stomach after a barium meal is the usual criterion adopted by radiologists to determine the presence of gastric retention, but even when this is accompanied by evident deformity and narrowing in the pyloric region it does not necessarily follow that the pyloric stenosis is permanently of severe degree. Jordan and Kiefer (1934) reported 79 cases exhibiting a six-hour residue with relief obtained by medical means in 89 per cent., but it must be noted that recurrence was observed in rather a high proportion of these.

CONSERVATIVE TREATMENT

Pylorospasm and œdema may temporarily transform a slight degree of obstruction into a high one, but it is not my intention to deal especially with such conditions in this communication, but rather to stress the fact that it is a mistake to assume that organic narrowing of the pyloric canal, even of high degree, must in all cases be treated surgically. The following case was one of the first which directed my attention to this fact:—

A. B., aged 45, consulted me in 1928. He had long been known to me as a strong healthy man who complained occasionally of dyspepsia. When he first asked me to see him he said he merely had a recurrence of his dyspepsia due to several indiscreet meals, but as he walked about the room he was occasionally seized with attacks of severe colicky pain. Physical examination revealed nothing of importance, but it was clear that his symptoms were probably organic; he was ordered a duodenal ulcer diet with small doses of alkali. Seen in London three weeks later he told me that he had had no symptoms since the day he saw me, but I advised X ray examination, and this revealed pyloric stenosis with a twenty-four-hour residue. The patient was very well and had just begun work of an important nature which he could not postpone. He was placed on a diet from which all substances such as raw vegetables, calling for prolonged gastric indigestion, were excluded, and was told to continue the alkali. During the subsequent eight years this patient has only once had any gastric symptoms; he has gained weight and has carried out his full duties without interruption. Subsequent X ray examinations confirm the presence of a relatively high-grade pyloric stenosis with a gastric retention of never less than seven hours.

When I first saw this patient with the X ray findings I felt that I was perhaps doing wrong in yielding to his insistence that his apparent good health and the pressing nature of his work precluded operation. His subsequent history convinces me that his attitude was justified.

Shortly afterwards the following case came under my observation:—

C. D. attended my out-patients at the Middlesex Hospital for many years. When first seen at the age of 56 he was recovering from an attack of pain and vomiting which had gone on for some weeks. There was a past history suggestive of duodenal ulcer, and X ray examination revealed pyloric stenosis with a gastric retention of over twenty-four hours. He refused operation because he was already feeling nearly well, and at my suggestion returned to work on a diet which was almost entirely fluid. He took bottles of milk with him to his work. Seen nine months later he was re-examined with the X rays which still showed a large gastric residue at nine hours; the radiograms were displayed in the out-patient department and the students were asked what advice should be given to him. All of them said that he must have a gastro-enterostomy. I then asked the patient how he had passed the previous day, and he gave a vivid description of his work as a locomotive driver on one of the big railways, involving long hours of very hard work which he was carrying out with complete efficiency. This work he continued to perform for many years until he died of an acute pneumonia.

In this case the decision not to operate was reached at the end of three weeks' preliminary treatment; in this interval the patient had been radiographed and had remained on a fluid diet and had become so well that he begged me to permit him to attempt work; he seemed a very sensible man and quite understood my explanation that even a fluid diet, maintained during his work hours, might fail to keep him in health. But he was determined to try this and regained strength and maintained his weight. After a few months the emptying-time of the stomach had somewhat improved and the patient was perfectly happy to continue on his restricted diet.

Carcinoma of the stomach is perhaps the commonest of all causes of organic pyloric obstruction, and when this condition is suspected it is usually essential to proceed to surgical treatment without delay because progressive obstruction is inevitable; but cases arise in which there is doubt as to the exact nature of the obstruction and it by no means always follows that exploration is essential. The following is an illustration:—

E. F., an Anglican clergyman, consulted me at the age of 69 on account of loss of appetite for two months and a feeling of distension after meals. He had no pain, was well nourished, and of rosy countenance. A gastric analysis showed a slightly climbing curve of HCl with a considerable residue at three hours, without blood or evidence of stagnation. The X ray examination showed an eight-hour gastric residue and the duodenal cap was practically invisible. I asked Dr. R. A. Young to see him with me in consultation, and we agreed that his age, relative good health, and the absence of evidence of malignancy justified us in recommending purely medical treatment. He was given a diet largely of fluids with small doses of alkali. I did not see him again for seven years, at the end of which time he consulted me for a recurrence of symptoms; he had remained well and at work for the whole period, but for four weeks had been troubled with heaviness and a little pain some hours after meals and loss of appetite. He was a few pounds heavier than when I had first seen him, and a repetition of the examination revealed the same findings as before. A few days of semi-starvation restored him to health, and he has been back at work and keeping well ever since, his age being now 77.

It is worthy of remark that the three cases which have been cited had had little or no vomiting; this fact made it unnecessary to employ gastric lavage; the diet given in each case consisted of glucose lemonade for a day or two, followed by diluted milky feeds and proceeded to a semi-fluid diet for several weeks. The first and third patients were ultimately able to take a light diet differing little from that of other members of the household, but care was taken to avoid all foods calling for prolonged gastric digestion. Sufficient attention is seldom given by medical men to the fact that perhaps the principal function of the stomach is to secure *liquefaction* of the food; recognition of this function enables us to classify the foods requiring prolonged gastric digestion with considerable exactitude; liquefaction does not connote solution, but the chyme is a thin fluid having the consistency of weak gruel. It is clear that vegetable matter, particularly raw fruits and vegetables, is the most difficult to reduce to such a state, whilst fluids such as soups, milk, cream, and soluble and semi-soluble carbohydrates, such as sugar, crisp starchy products, sponge cake, and milk puddings, are the most susceptible to gastric digestion. With a little care it is not very difficult to devise a sufficient and appropriate diet whenever the degree of obstruction is not insuperable, but it is very necessary to secure the willing and intelligent coöperation of the patient, and success can seldom be achieved unless the patient with pyloric stenosis realises that the diet he is given has been chosen in the not altogether optimistic hope of avoiding surgical operation. The following case is instructive:—

Miss G. H., aged 70, was seen at a time when she was bedridden on account of vomiting and discomfort in the upper abdomen. This condition had been getting worse for five weeks. Appetite was good and the patient was relatively well in the morning, but was seized with vomiting in the afternoon or evening. There was a history very suggestive of duodenal ulcer many years previously. On examination the stomach was standing out although peristalsis was not visible. After a few days' treatment X ray examination revealed gastric obstruction with a delay of over twenty-four hours. No actual filling defect could be seen, and the past history of mild indigestion for many years made the diagnosis of non-malignant pyloric obstruction probable. Surgical treatment was recommended by myself and by Mr. Gordon-Taylor, but the patient and her relatives were extremely reluctant to accept this. She was accordingly treated by gastric lavage and a strict fluid diet, and remained well for nine months, at the end of which time vomiting recurred and was accompanied by a small hæmatemesis. She was transferred to hospital and after a few days' preparation gastro-enterostomy was successfully performed. She has remained well since.

The vomiting and high degree of pyloric obstruction in this case made it almost certain at the outset that medical treatment could only postpone operation, and it is equally certain that without gastric lavage the patient would never have regained the brief spell of good health which preceded surgical intervention, but the fact that she had easily learnt to wash out her own stomach was of great value in that it made preparation for operation easy and safe. This is of importance because prolonged vomiting will not infrequently produce a disturbance of the blood chemistry, through loss of hydrochloric acid, which profoundly affects the general condition of the patient, and may even result in attacks of tetany. The dilatation of the stomach and the presence of stagnant contents present complications very unfavourable to surgical success, and these factors go far to explain the relatively inferior surgical statistics of cases with gastric retention which have been recorded by Berkman (1923).

SUMMARY AND CONCLUSION

The purpose of this paper is not in any way to suggest that medical treatment should supplant surgical treatment in cases of non-malignant pyloric stenosis, but it is desirable to stress once more the fact that every case of peptic ulcer, including those with pyloric stenosis, should be treated individually. Patients with a high degree of pyloric stenosis are occasionally encountered in whom health and happiness can be preserved without surgical intervention. Most careful judgment is necessary in the selection and treatment of these cases.

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A REVIEW OF GOLD THERAPY*

By W. S. C. Copeman, M.D. Camb., M.R.C.P. Lond.
PHYSICIAN TO THE BRITISH RED CROSS SOCIETY'S CLINIC FOR RHEUMATISM, LONDON, AND ASSISTANT PHYSICIAN TO THE CHILDREN'S DEPARTMENT OF THE WEST LONDON HOSPITAL; AND
W. Tegner, B.M. Oxon., M.R.C.P. Lond.
CHIEF ASSISTANT AT THE CLINIC

Gold salts were first employed experimentally in chronic rheumatism in 1926 (Feldt) following on their previous use in pulmonary tuberculosis. In 1929 Forestier published a series of cases treated by this method, claiming some success. In 1932 he stated his belief that in cases of progressive rheumatoid and infective arthritis, gold was the medicament of choice. Since that date we have employed gold salts in selected cases at the Red Cross Clinic and elsewhere, and this paper is an attempt to review the results in the cases that we have followed up consistently.

There seems to have been no rationale for the use of gold salts in rheumatic conditions. Empirical trial in the hands of some observers tended to show, however, that good results may undoubtedly be produced in certain cases of chronic rheumatism, whilst in rheumatism of the juvenile type (Slot and Deville 1934) and in osteo-arthritis (Weissenbach and Françon 1936) it is generally agreed that they may be harmful.

It is commonly recognised now that the salts of gold, like those of most of the other heavy metals, are not without danger when used indiscriminately. Amongst the "accidents" of gold therapy, those most commonly met with seem to be dermatitis, fever, diarrhœa, stomatitis, and albuminuria. Although investigation of many of the reported cases suggests that most of these accidents are due to overdosage, gold being a cumulative drug, there is no doubt that there are wide variations in individual susceptibility, and for this reason close observation of all cases on gold treatment becomes a very real

* A paper read to the Committee for the Investigation and Study of Rheumatism on Nov. 3rd, 1936.

necessity. The severe general reactions culminating in temporary exacerbation of the original complaint, which are not infrequently observed at the end of a course of such injections, presumably differ from these "accidents" only in degree.

Other observers (Douthwaite 1936, Pemberton 1936, Hartfall and Garland 1935) have recently reported series of cases successfully treated by means of gold salts, and certain of these express the opinion that such general reactions far from being harmful are almost an essential to success. This has not, however, been our own experience.

Types Treated

Only selected cases have been treated, these all conforming unless so stated to the "rheumatoid type" of the Royal College of Physicians' committee on chronic rheumatic disease (1934). Several cases of Still's disease were also treated, but are not included in the series under review (Copeman 1936). Three cases of spondylitis of the ankylosing type are, however, included and discussed.

The present series consists of 51 cases, which is considerably less than the number treated, but includes all those cases that it has proved possible to keep under periodical observation. It is hoped that this series will remain under observation, and will with others form the basis for a further annual survey. The contra-indications observed were merely those of age or obvious infirmity such as albuminuria or heart disease.

Method of Treatment

In the great majority of cases the salt employed was Allochrysine, an aqueous solution of thioglyceryl-sulphonate of gold and sodium. The injections were made intramuscularly into the buttock at intervals of five days in certain hospitalised cases, and seven days in ambulant cases.

The initial dose was in most cases 0·01 gramme, progressing on the second occasion to 0·05 g., and subsequently to 0·1 g., which was seldom exceeded; the total amount given in any series was 1·0–1·5 g. This dosage is somewhat lower than that generally employed by other workers, but it is thought that it is justified by the fact that although results may be slower they do ultimately appear in a remarkable proportion of cases treated, and the fact that in 51 cases we have only observed 3 "accidents" which could definitely be attributed to gold medication, and which proved severe enough to render further injections inadvisable. None of these proved fatal. An interval of 6–8 weeks is left after the first series of injections is complete, after which a further course is undertaken if the blood sedimentation-rate is still raised.

Before embarking upon the first series of injections the blood should be examined, and if any degree of secondary anæmia is found, treatment for this should be undertaken concurrently, since it appears from our observations that gold tends to exacerbate and even to produce anæmia of this type. After each course of injections it should again be examined if possible, since, as Shackle has pointed out to us, a tendency towards leucopenia may sometimes be observed, which in its most severe form may progress to agranulocytosis; while the occurrence of eosinophilia is sometimes thought to give warning of dermatitis before this is obvious clinically.

The blood sedimentation-rate should also be estimated before gold injections are started and after each course. This observation, which is very simply performed, although it is not actually diagnostic, is apparently of great value in estimating the activity, and so the progress, of the disease; it may thus be the first indication of improvement in certain cases.

In our series of cases physical methods of all sorts were employed in addition to the gold therapy in order to prevent or correct mechanical deformity.

Complications

A number of unpleasant sequelæ after the administration of gold salts have been reported, although they have become rarer since the standard of dosage has been universally reduced for rheumatoid patients, following on the observation that this class of patient appears to be less tolerant of gold than tuberculous subjects (Secher and Gudiksen 1935). These unwanted effects fall chiefly upon the skin and mucous membranes, the liver and kidneys, and the hæmopoietic system. A number of fatalities have occurred, but very few of these have been published in detail. It must be assumed, however, that these cases resulted from severe involvement of the latter system. This is borne out by the fact that one of us was informed at the General Hospital in Vienna that in the three fatal cases seen there, each had developed purpura before death. It seems possible that the stages may be from purpura simplex without blood changes, through purpura hæmorrhagica, to agranulocytosis and death if unchecked.

In the present series 4 cases of dermatitis were observed, of which 2 were transient and of no clinical importance, whilst 2 were of the exfoliative type. Each of these latter cases lasted nearly three months, and no form of treatment appeared to influence their course within that period. In these two cases, the arthritis (which had been rather overlooked during the anxious period of the dermatitis) was subsequently found to have been very much improved. The other complications observed in our series will be found in Table II, and include diarrhœa, general malaise, stomatitis, and proctitis. They occurred in 26 per cent. of the series.

It is interesting to compare Forestier and Certonciney's analysis of their recent series (1936) of 50 cases of chronic progressive polyarthritis, all of 1–2 years' duration before they came under treatment with gold. These patients have all been observed over a minimum period of three years and had received at least four courses of gold. This series, they state, represent their *least* satisfactory patients; the most satisfactory being those who respond after 1–2 courses of injections. In this series 40 per cent. showed some "accident" at some time, none being fatal, although 4 of these patients were over 70 (one, aged 83, having received 9 g. in all without harm!). Each course in this series averaged 1·5–3·0 g. of gold. The results of this prolonged therapy are expressed by the authors as follows:—

Good or very good	64%
Moderate	28%
Poor or nil	8%

In Hartfall and Garland's series (1936) of 374 cases they report:—

Marked improvement or cure	77·8%
Slight improvement	15%
Nil	5·6%
Worse	0·3%
Died	1·3%

The complications discussed by the former authors include in addition to those already mentioned purpura, jaundice, which is rare but always serious, pruritus, eczematous patches, and herpes zoster. They mention that they have never seen the arthritic condition of a patient made worse by gold, although they have several times seen old troubles, which they do not specify precisely, exacerbated. The various accidents affecting

the skin and mucous membranes comprised 27 per cent. of their total complications, and occurred mostly between the third and fifth courses of treatment. They mention the occurrence of albuminuria also, but like Crosby (1936) agree with our own view that this sign, in the absence of symptoms or of a raised blood-urea, is of little importance and need not be an indication to interrupt the course.

From a study of our cases and of those reported we believe that the contra-indications for gold therapy, apart from obvious disease of the chief viscera, may be comprised practically under the headings of severe anæmia and eczema.

Although it seems clear that certain persons possess a special sensitivity to gold, these are the exception and symptoms may manifest themselves even after the first injection. The vast majority of complications however do not occur until a considerable amount of gold has been given. This being so it is desirable to have some indication that "saturation point" is being approached. We believe that there is as yet no such test that is capable of routine application, although Shackle believes that a rise in the eosinophil count indicates the onset of cutaneous complications, a statement denied by Coste (1933) and Bourderon (1932). Denier (1935) has also suggested the value of infra-red photography and of Wood's glass in this connexion, while Coste regards a slight prolongation of the bleeding-time as being significant of a hæmorrhagic tendency.

It is generally stated that gold may lead to a secondary anæmia and that an early manifestation of this may be a punctate basophilia. Griffiths and Race (1935) found this in 16 of 21 cases investigated, although in none of our cases have we been able to confirm this observation.

TREATMENT OF COMPLICATIONS

Our experience of the more severe complications of gold therapy is luckily limited. It seems, however, that prophylaxis is generally more valuable than curative treatment. Dermatitis of the exfoliative type has in our experience usually lasted three months whatever treatment is employed.

Methods of prophylaxis include the routine administration of liver, calcium, and glucose. It must also include reduction of dosage and the proper spacing of the injections when necessary.

Methods of treatment will also include liver and calcium therapy, increase in the fluid intake, and cessation of gold injections. For skin complications sodium hypophosphite may be given intravenously, 10 c.cm. of freshly prepared 20 per cent. solution being administered daily. Calcium gluconate or chloride may also be given intramuscularly in 1 per cent. solution. Autohæmotherapy is recommended by some authorities (Pèrles 1936). In addition to these measures a protective or anæsthetic ointment should be used, and it has seemed to us that if the affected parts can be protected from light the rash will often retrogress more quickly.

Results of Treatment

A series of 51 cases has been observed and analysed over a period varying from six months to four years. The results are given in the Tables. The difficulty of providing a comparable control series has seemed insuperable, and this has accordingly not been attempted systematically. A large number of cases of similar type have been seen during the same period, however, and treated by other methods, and our impression of the results obtained in the two series of cases is given. Moreover, a considerable number of the earlier cases were given gold only as a last resort, after all other methods had failed to check the progress of the disease; this fact in itself is a form of control for the gold treatment administered subsequently.

TABLE I

Duration of Disease and Amount of Treatment

—	No. of cases.	Apparently cured or much improved.	Improved.	No improvement.
		%	%	%
Duration—				
Over 5 years ..	19	9 (48)	9 (48)	1 (4)
Under 5 years ..	32	20 (60)	9 (33)	3 (7)
Under 1 year* ..	14	8 (57)	6 (43)	0 (0)
Amount of gold—				
More than one course	18	13 (72)	3 (18)	2 (10)
One course or less..	33	15 (45)	16 (49)	2 (6)

* The great majority of apparent cures fell into this group.

TABLE II

Complications of Gold Treatment

Sex and age.	Duration of arthritis.	Type of complication.	Result on arthritis.
M. 62	1 year.	Severe exfoliative dermatitis.	Arthritis cured.
F. 51	15 years.	Diarrhœa after any dose over 0·1 g.	Very much better.
F. 59	7 "	Malaise.	Much better.
F. 54	9 "	Transient rash once ? due to gold.	"
F. 59	2 "	Stomatitis and proctitis.	Better.
F. 59	2 "	Papular rash.	"
F. 53	6 "	Old-standing diarrhœa exacerbated.	"
M. 51	1 year.	Malaise.	"
M. 46	4 months.	Exfoliative dermatitis and stomatitis.	Apparently cured.
F. 38	6 years.	Diarrhœa.	Better.

Complications occurred above the age of 50 in 80% of cases, other cases all over 38 years. All cases were improved in spite of complications.

TABLE III

Effect of Treatment on Sedimentation-rate (B.S.R.)

Result.	No. of cases.	Average duration of treatment.	Average fall of B.S.R. (mm.).
Much improved.	29	5½ months.	37·7
Improved.	18	4 "	17
No improvement.	4	5½ "	8

ANALYSIS.—In this series 13 (26 per cent.) were males and 38 (74 per cent.) females; their ages varied from twenty to sixty-eight. The rheumatoid type group of the Royal College of Physicians' classification included 90 per cent. of the cases, 2 of which gave a previous history of gonorrhœa; 6 per cent. of cases were of spondylitis ankylopoietica and 4 per cent. of peri-arthritis—that is, painful joints without conspicuous radiographic changes. In 23 per cent. of cases toxic symptoms were noticed during the administration of gold. There were 9 per cent. who received three or more courses of gold, a course being equivalent to 1·0–1·5 g.; 11 per cent. received two courses; 54 per cent. received one course; and 26 per cent received less than one course.

In the series we obtained the following results:—

Great improvement or cure ..	58%
Improvement	36%
No improvement	6%

These figures represent improvement in the rheumatoid and peri-arthritis groups, improvement in the spondylitis cases being negligible—a point also noticed by Bach (1936).

The sedimentation-rate.—A study of the blood sedimentation-rates (Westergren) showed that in the

majority of cases (69 per cent.) there was a definite drop in the rate during and after treatment. In 9 per cent. of the cases there was a preliminary rise after gold injections started, which went on to a fall, a point we think of importance, as a temporary rise in the rate should not necessarily be regarded as an indication of failure of treatment. In 18 per cent. no fall was noticed and in 4 per cent. the sedimentation-rate has continued to rise. Where there was a fall it corresponded with those cases that were to show a clinical improvement, and it often preceded it. In two cases of the series a sedimentation-rate estimated some time after the last injection showed that this was rising again, although subjectively the patient reported good health and no recurrence of symptoms. This probably is an indication for the continuation of small doses of gold at regular intervals, a maintenance dose being found just as in the case of liver therapy for pernicious anæmia.

Rheumatoid arthritis is known to be generally progressive, but spontaneous remissions are known to occur, although comparatively infrequently (Forestier estimates these in cases of one year's duration at 2 per cent.). Fifty-eight per cent. of cases that improved seems to be too many to be due to spontaneous remission, and it would be a curious coincidence that they had all occurred during gold treatment. From our figures improvement does not seem directly dependent on dosage. The individual reactions of patients to gold varies very greatly however, and in those cases in which severe toxic symptoms supervened a great improvement in the arthritis resulted subsequently.

In certain cases an estimation of the sedimentation-rate was prevented by difficulty in venepuncture which in two cases was due to a dermatitis, and this would indicate the need for a reliable micro-method for estimating it from the capillary blood.

Summary

1. A series of 51 cases mostly of the rheumatoid arthritic type have been treated and observed over a period of from 6 months to 4 years. Great improvement or cure has resulted in 58 per cent. The three cases of ankylosing spondylitis included in this series have shown negligible improvement only.

2. Clinical improvement was preceded in a majority of the successful cases by a fall in the blood sedimentation-rate. In a certain proportion of these, however, this fall was preceded by a preliminary rise of variable duration. In no case was there clinical improvement when the sedimentation-rate failed to drop. In certain cases indeed the approach of relapse was seen to be preceded by a further rise. The sedimentation-rate seems therefore to be of considerable importance in the prognosis of this type of case.

3. It seems that the clinical result achieved is not always directly related to the quantity of gold administered.

4. Certain "accidents" may result from gold therapy. The importance of these seems to have been over-estimated, however, in recent articles. Unforeseen sequelæ occurred in 23 per cent. of our cases, but only in 3 cases were these so severe that the treatment had to be discontinued. Of these three, 2 were cases of exfoliative dermatitis and the other of rectal spasm, hæmorrhage, and stomatitis. The dermatitis cases lasted, in spite of treatment, for about three months and their arthritis was subsequently "cured"; while the latter lasted for about ten days, with temporary improvement in the arthritis, which subsequently relapsed. Gold was not recommenced in this case. It seemed that albuminuria when unaccompanied by further symptoms could be discounted.

Since 11 of these 12 cases with complications occurred in ambulant patients, it seems that hospitalisation at the outset of such treatment may be desirable where this is possible.

5. When treatment was unsuccessful the period of evolution of the disease before the gold therapy has been considerably longer than the average of those cases in which it proved successful. In certain of these cases a permanent rise in the sedimentation-rate curve after a preliminary fall seems to suggest that a degree of tolerance of gold may be established.

6. It is our impression that gold is the medicament of choice in early cases of the rheumatoid arthritic type when the sedimentation-rate is raised. It seems that its rôle is to act upon the progressive and inflammatory elements; and this being so it appears to be necessary to employ physical methods in addition to deal with the cicatricial and mechanical aspects that remain in the majority of cases when the former elements have been controlled.

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STRIÆ ATROPHICÆ CUTIS

By David B. Rosenthal, M.D. Melb., M.R.C.P. Lond.

MEDICAL SUPERINTENDENT OF THE GRESSWELL SANATORIUM, MONT PARK, VICTORIA, AUSTRALIA

Attention has been directed recently to this condition by the reports from Parkes Weber (1935) of two cases of "idiopathic" striæ atrophicæ, together with a brief review of other recorded cases and a summary of the causes. He thought that the condition might be due to an insufficiency of cutis, with perhaps a deficiency of elasticity, which results in multiple cleavage to adjust to more rapidly growing parts beneath.

In an earlier report Weber (1917) recorded a case of bilateral pulmonary tuberculosis, the right side being more extensively involved than the left. Striæ atrophicæ were observed in the lower part of the left posterior thorax, transverse to the long axis of the body. This was attributed to the patient's lying usually on his left side, for the skin would be stretched most in this part. Sibley

(1924) reported a case of striæ atrophicæ in which the lines were vertical, and limited to the regions of the arms and forearms, abdomen, and groin. Obesity, perhaps related to endocrine dysfunction, was discussed as a cause. Other factors considered were the possible disproportion between cutis and subcutis, and the rapid development of fat. A case of striæ patellaris, after enteric fever, was recorded by Rolleston (1927), who considered the abnormal trophic condition of the cutis mainly responsible, with possibly an associated increase in tension of the skin, due to the maintained flexion of the knees—a theory favoured by most authorities. The possible influence of the pituitary gland has been much discussed. The furrowing of the scalp, "which is deeply corrugated like that of a bulldog" is a well-known feature of acromegaly (Boyd 1932). Here the striæ are due to redundancy of skin. In discussing such a case, Weber (1932) considered the possible relationship of pituitary disorder to the formation of idiopathic striæ; and elsewhere (1935a) suggested that in those cases of striæ associated with rapid growth at or following puberty, a temporary basophilic hyperpituitarism might be responsible. Alternatively, deficient hormonic activity of the pituitary gland might be responsible for insufficiency of cutis, leading to the formation of "vergetures" (Weber 1928)—a process somewhat akin to that seen in the hypopituitarism of Fröhlich's syndrome. It might be noted that striæ in young adolescents with obesity, which lessens or disappears with maturity and which is almost certainly due to a temporary endocrine upset, is a not unfamiliar clinical phenomenon. Goldsmith (1936) summarised the skin changes that might be associated with endocrine disorders, including the striæ albicantes (atrophicæ) of Fröhlich's syndrome, the "folding" of hyperplasia in acromegaly, and the purplish lineæ atrophicæ of Cushing's basophilic hyperpituitarism. Of this condition, Kaufmann (1929) states: "... The cause is an overstretching of the skin which has become less resistant. ... It is also thought that there may be growth asymmetry of the soft parts in relation to the growth of the bones of younger individuals, in analogy to the so-called cutis verticis gyrata, a peculiar skin folding on the scalp—a consequence of incongruent disharmonic development of the scalp in relation to the underlying bones. ... This (occurrence of striæ) may be of practical interest in later life, as a sign of previous serious sickness." Dore (1936) remarks: "... The usual meaning of these lineæ is that the skin has been unduly stretched or pressed upon over some fairly long period of time, but they give no indication of the cause of the stretching. ... They are of a purple or livid colour at first, becoming paler in course of time. ... They show small cross wrinkles of epidermis at right angles to the axis of the linea; these wrinkles can be smoothed away by stretching the skin in a direction parallel to the linea, but return at once on relaxing the tension." Of particular interest in reference to the cases recorded below is the following further quotation: "... In pleural effusion, they (the striæ) occur in the posterolateral portion of the lower part of the thorax on the same side, whereas in unilateral pulmonary tuberculosis they are found on the opposite side, owing to the patient's lying on the unaffected part. In the semi-reclining position, the skin is stretched in the lower dorsal region, and striæ occur in this part of the body."

In none of the many cases of pleurisy with effusion that have come under my observation have lineæ atrophicæ been noted; and, further, in the cases described below, it was found impossible to correlate definitely the attitude of the patient in bed with either the distribution of the pulmonary lesion, or the situation of the lineæ. The attitude appears to be determined not only by the site of the disease in the lungs, but also by subsidiary factors such as habit, inclination, or immediate surroundings.

Briefly, the causes to be considered are: (1) maldevelopment: insufficiency of cutis, with deficiency of elasticity; (2) rapid stretching: due to tumour, obesity, growth, pregnancy, &c.; (3) endocrine dyscrasia: particularly pituitary abnormality; (4) toxic causes—e.g., tuberculosis, typhoid, cachectic states, &c.

From the embryology it is difficult to accept a deficiency of cutis as a primary factor, and probably the causation is multiple, the size and situation of the lineæ being determined by external physical factors, together with purely local conditions in the skin that determine the lines of cleavage.

FIG. 1.—The striæ in Case 1.

A survey of a sanatorium population—in this case exclusively male—should favour the observation of such cases as are described below, pulmonary tuberculosis being a disease that pre-eminently attacks young people at or about the growth period, and involves treatment that favours the development of striæ—i.e., prolonged rest. It is concluded that the tuberculous element plays little if any part in their causation.

CASE REPORTS

CASE 1.—Aged 18 he was admitted in May, 1935, suffering from unilateral tuberculosis of the right lung. Treatment included a long period of rest in bed, and later pneumothorax therapy. In October striæ were first noticed on the back, over the dorsolumbar region, both sides of the body being involved, but the distribution slightly favouring the right side. The striæ were roughly transverse to the long axis of the body, as a photograph taken at this time clearly shows (Fig. 1). No increase in number was noticed, whilst the colour gradually faded from the initial purplish-red, through a stage of pale pink in April, 1936, to ill-defined white streaks in June, 1936. When examined in August the original striæ could be recognised only with difficulty. General condition was good throughout.

There was a history of rapid growth at the age of 15. His height was 6 ft. 1 in. when first seen, and remained unchanged during the period of observation. His weight was 10 st. 1 lb. in December, 1934, 8 st. 7 lb. in December, 1935, and had gradually increased again to reach 9 st. in August, 1936. The patient preferred no particular position when at rest in bed.

He volunteered the information that he had indulged to a considerable extent in bicycle racing during the years 1933 to 1935, and it is suggested that the maintenance of the attitude of full spinal flexion that this exercise demands may have helped to determine the site, if not the occurrence, of the striæ.

CASE 2.—Aged 18 he was admitted in August, 1935, suffering from bilateral disease, the left lung being the

more affected. His height was 6 ft. and his weight 9 st. 3 lb. Early in 1936 lineæ atrophicæ were observed in the dorsolumbar region, similar to those in the previous case, but forming four discontinuous linear markings to the left of the midline. They showed well the cross-wrinkling at right angles to the line of the linea, described by Dore. Little change has been noted in their appearance up to the present time.

This patient emphatically preferred the right side when lying, in which position the affected portion of skin was not stretched, but rather folded, the striæ falling naturally into the sulci so produced. More recently it was noted that the skin over the left clavicular region, where muscular wasting was pronounced, had a slight folding, the lines being roughly parallel to the clavicle.

General condition was poor, with progressive emaciation.

CASE 3.—Aged 16 years, admitted in January, 1936, suffering from bilateral disease, of chronic type, both lungs being about equally involved. Weight 7 st. 9 lb.; height was 6 ft. Great improvement from the beginning of routine treatment, with increase in weight. In July, when the weight was 10 st., striæ atrophicæ were noticed on the buttocks and thighs, symmetrical in distribution, the direction on the anterior surface of the thighs being roughly at right angles to the long axis of the limbs, whilst the striæ on the posterior surface were along the axis. Those on the buttocks tended to radiate from the coccygeal region. The striæ were linear and red and similar to those seen on the abdominal wall in pregnancy, and were associated with the development of fat in the same region. A few weeks later there appeared one linea in the lower dorsal region, in a direction transverse to the long axis of the body. It was mainly right-sided but crossed the midline. The length was 63 mm. and the width at the broadest part was 4 mm. The colour was deep red, with a covering of thin "papery" epidermis. The appearance was as of a cleavage in the subepidermal tissues.

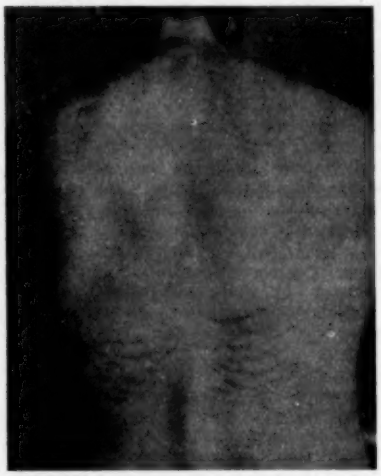

FIG. 2 (Case 4).—The striæ when fully developed.

This patient lay mainly on his back, with a slight preference for the right side. His weight in August was 10 st. 9 lb., whilst his height was unchanged at 6 ft.

There was much to suggest a pituitary abnormality in this case: relative obesity, with fat distribution rather of the female type, thighs, buttocks, and breasts being particularly affected; a full, "fat" face; voice tended to be rather high-pitched; and the limbs were somewhat disproportionally long. On the other hand, the mental state was normal, the external genitals appeared to be normally developed, and X ray examination of the skull showed a normal pituitary fossa.

CASE 4.—Aged 22 years, he came under observation, suffering from bilateral disease, the right lung being affected more than the left. His height was 5 ft. 11 in., and his weight, which a year before had been 11 st. 7 lb., was 9 st. 5 lb. About a month after admission striæ atrophicæ were seen in the dorsolumbar region, similar in type to those described above; one linea occurred on the right side and three on the left. About two weeks later several lineæ, shorter and less clearly defined, had appeared on the right side, whilst those previously seen were already fading. The striæ have now developed to the extent shown in Fig. 2. The general condition was poor but improving. The patient preferred lying on the right side.

The cases here described have several features in common. The patients were all young men at or just past the growth period. They were all suffering from uncomplicated pulmonary tuberculosis. No symptoms were referable to the skin condition, which was discovered during routine examination. In each case the blood gave no reaction to the Wassermann test.

One other case illustrating the somewhat similar condition of macular atrophy has been observed. The region affected was a roughly circular area of skin, overlying the lower dorsal spine in the midline, and about 10 cm. in diameter. The macules were quite white and dull. The skin was somewhat "dry" but otherwise normal. This patient (who was unaware of the condition) was aged 26, his height was 6 ft., and his weight, which had reached 12 st., was just under 10 st.

THE SITE OF THE PULMONARY LESION AND THE ATTITUDE OF THE PATIENT

In order to ascertain whether the site of the lung disease influenced the position in which the patient reclined at rest, a questionnaire was circulated amongst 100 sanatorium patients. The results of this investigation, together with the site of the lung lesion, as determined by clinical and X ray examination, are shown in the Table. It was difficult to draw any definite conclusions, but it will be noted that in the unilateral group the right side was favoured in reclining, although the majority of unilateral lesions were right-sided. Although some patients asserted that certain postures aggravated the cough (as would be expected), most were unable to give any reason for attitude at rest other than that "they had always slept that way." In 3 cases only did the patient state that the onset of the illness had determined any alteration of the position of rest.

Results of Questionnaire in 100 *Sanatorium Patients*

Site of lung lesion.	Position of rest.				Total.
	Right.	Left.	Indiff.	Back.	
Unilateral—					
Right	11	9	2	2	24
Left	10	1	4	—	15
Bilateral—					
Approx. equal..	11	4	8	—	23
Right more than left	9	1	3	—	13
Left more than right.. ..	10	3	5	—	18
Pleurisy with effusion—					
Right	2	1	—	—	3
Left	1	—	1	—	2
Bilateral ..	1	—	—	1	2
Total ..	55	19	23	3	100

SUMMARY

1. Four cases of striæ atrophicæ, observed in young men suffering from pulmonary tuberculosis, are reported, with brief mention of one case of macular atrophy.

2. In one of these cases evidence of disordered pituitary function was observed.

3. In determining the site of the striæ the reclining posture was of uncertain significance.

4. Tuberculosis has little if any effect in their causation.

I wish to acknowledge my thanks to the matron of the Greaswell Sanatorium, who was responsible for the arrangement of the questionnaire; and to Dr. J. Bell Ferguson, State Director of Tuberculosis, Victoria, for permission to publish the records of these cases.

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THE TRYPTOPHANE REACTION IN THE CEREBRO-SPINAL FLUID

ITS VALUE IN THE DIAGNOSIS OF TUBERCULOUS MENINGITIS

By John Spillane, M.B. Wales, M.R.C.P. Lond.

JUNIOR ASSISTANT TO THE MEDICAL UNIT, WELSH NATIONAL SCHOOL OF MEDICINE, THE ROYAL INFIRMARY, CARDIFF

Examination of the cerebro-spinal fluid is an important procedure in the diagnosis of tuberculous meningitis. The presence of the tubercle bacillus is, of course, conclusive, but its successful demonstration varies with different workers. Péhu, Dufourt, and Lafarcinade record a positive result in only 27 per cent. of their series, whereas Hemenway (1911) and others claim success in 100 per cent. In a consecutive series of 80 cases Ingham (1936) found the bacillus in 78. The successful demonstration of the organism, however, often demands very prolonged search and the chances of success often vary with the length of time expended. Occasionally a positive result is obtained only after three or four hours at the microscope. Such an inordinate expenditure of time is often impracticable, and so the attention of workers has been directed to other methods of examining the fluid with the object of discovering some specific reaction, easy of application and less time-consuming; of these, the demonstration of tryptophane bodies seems the most promising.

In 1927 Aiello directed attention to the presence of tryptophane bodies in the cerebro-spinal fluid (C.S.F.) of cases of tuberculous meningitis and obtained a positive result in over 90 per cent. of cases investigated. No true positive results were obtained in other conditions, and he concluded that a negative reaction practically excludes the disease. Brugi (1923) obtained a positive result in each of 12 cases of tuberculous meningitis, and no true positive result in 30 other conditions. Lichtenberg (1932) applied the test to the C.S.F. from 78 children and obtained positive results in 25, all of whom had tuberculous meningitis, in 23 the clinical diagnosis being confirmed by finding the bacilli in the fluid either before or after death; the remaining 2 cases died but autopsy was refused, though there was no doubt about the diagnosis. Among the 53 negative fluids no case of tuberculous meningitis was discovered. Rosenblatt (1934) obtained positive reactions in 12 cases of tuberculous meningitis, and a control group of 45 fluids from various other conditions gave no true positive results. Schumacher (1934) obtained 100 per cent. positive results in 32 cases of the disease. In a control series of 82 specimens one true positive reaction was given—a case of cerebral tumour. In a series of 19 cases of tuberculous meningitis, Bock (1936) found the test positive in each. In a control series of 97 clear fluids from other conditions he obtained negative reactions, and 3 purulent fluids (2 meningococcal and 1 staphylococcal meningitis) gave "false positive" results.

All the above investigators found that "false positive" reactions occurred in purulent, hæmorrhagic, or xanthochromic fluids regardless of cause, and concluded that the test is only applicable to *clear* fluids. Inasmuch as the C.S.F. in tuberculous meningitis is usually clear the test is not thus invalidated.

THE TEST

Three reagents are required: (1) Hydrochloric acid, concentrated. (2) Formaldehyde, 2 per cent. aqueous solution, prepared fresh daily by making a 1 in 20 dilution of the stock 40 per cent. formaldehyde. (3) Sodium nitrite, 0·06 per cent. aqueous solution; a 0·6 per cent. stock solution should be prepared weekly and from this a dilution of 1 in 10 made at the time of examination. Take 3 c.cm. of C.S.F. in a test-tube, add 15 c.cm. of the concentrated hydrochloric acid and 2 or 3 drops of the 2 per cent. formaldehyde solution. Shake and allow to stand for five minutes. Gently float on 2 c.cm. of the sodium nitrite solution and again allow to stand.

A positive reaction appears in two or three minutes as a delicate violet ring at the junction of the floating sodium nitrite solution with the subjacent fluid and persists for 15–30 mins. or more. The reaction is negative if no change occurs or only a faint yellowish ring appears at the junction. The reaction is best observed by daylight against a white background. Its intensity is in some measure quantitative, often being greater in well-developed cases and increasing as the illness progresses. In early cases the colour change is often delicate and especial care is necessary for its observation. The whole test, including the preparation of fresh solutions, can be carried out in 20 mins. and expert knowledge is not required.

The "false positive" reaction, which is only obtained in purulent, hæmorrhagic, or xanthochromic fluids irrespective of their cause, appears as a purplish ring at the fluid junction, deeper in colour, thicker and more easily seen than the true reaction, and in many cases diffusing into the fluids both above and below.

RESULTS OF THE TEST

The C.S.F. from 172 consecutive cases of various diseases have been studied.

In 29 the fluids were purulent, hæmorrhagic, or xanthochromic and so were considered unsuitable for the test; on examination they gave, as was to be expected, a "false positive" reaction. Of these there were 13 purulent fluids obtained from meningococcal meningitis (10 cases), pneumococcal meningitis (1 case), influenzal (Pfeiffer's bacillus) meningitis (1 case), and streptococcal meningitis (1 case); 5 were hæmorrhagic fluids, from cerebral hæmorrhage (3 cases) and subarachnoid hæmorrhage (2 cases); and 11 were xanthochromic fluids, subarachnoid hæmorrhage (5 cases), spinal tumour (4 cases), and tabes dorsalis (2 cases).

There remained 143 fluids which, being clear, were suitable for applying the test. The following results were obtained:—

Of 32 cases of tuberculous meningitis, all but one were confirmed by demonstrating the bacilli in the fluid; 30 gave a positive tryptophane reaction and 2 a negative. The negative fluids in other respects were typical of tuberculous meningitis. The first, from a baby aged

12 months, on the seventh day of the illness, showed 68 cells (chiefly lymphocytes) per c.mm.; chlorides, 510 mg. per 100 c.cm.; proteins, 70 mg. per 100 c.cm.; and sugar, 45 mg. per 100 c.cm. The second, from a girl aged 6, on the fourteenth day of the illness, had a cell count of 109 (chiefly lymphocytes) per c.mm.; chlorides, 620 mg. per 100 c.cm.; proteins, 50 mg. per 100 c.cm.; and sugar, 40 mg. per 100 c.cm. In each case the tubercle bacillus was found after a search of roughly 15 mins.

Two of the positive cases are worthy of special mention.

CASE 1.—A boy, aged 14, had been suffering for one month from miliary tuberculosis of the lungs. There were no signs of involvement of the nervous system and the C.S.F. was clear, and normal cytologically and chemically. The tryptophane reaction proved negative. The patient developed signs of meningitis—neck rigidity, Kernig's sign, &c.—48 hours after examination of the fluid. At this stage examination of the fluid revealed an increased cellular content, some diminution in the chlorides and sugar, but no tubercle bacilli even after searching for several hours. The tryptophane reaction was now clearly positive.

CASE 2.—A boy, aged 15, also with miliary tuberculosis of the lungs, but no evidence of involvement of the nervous system, had been ill for 3 days when lumbar puncture revealed a clear and normal cerebro-spinal fluid. No tubercle bacilli could be found after prolonged search and the tryptophane reaction was negative. Three days later symptoms of meningitis appeared and examination of the fluid showed a greatly increased cell count, a high protein content, and diminished chlorides and sugar. Tubercle bacilli were demonstrable and the tryptophane test was now positive.

There were 25 cases of tuberculosis (bones, joints, and chests) without involvement of the nervous system, all of which gave a negative tryptophane reaction. In each of 61 cases of nervous diseases, other than tuberculosis of the meninges, brain, or cord, the fluid gave a negative reaction, the pathological conditions in these cases being as follows:—

Meningismus (6); acute aseptic meningitis (1); cerebral abscess (3); cerebral tumour (5); disseminated sclerosis (8); general paralysis (8); cerebral syphilis (4); tabetic optic atrophy (1); tabes dorsalis (4); epidemic encephalitis (1); idiopathic epilepsy (2); congenital syphilis (1); transverse myelitis (1); spinal tumour (1); dementia præcox (10); manic-depressive psychosis (5).

Finally, the C.S.F. from 25 cases which was normal in every respect—cells, proteins, chlorides, and sugar—and from persons showing no evidence of tuberculosis or any disease of the nervous system gave, without exception, a negative tryptophane reaction.

THEORY OF THE REACTION

The chemistry of the reaction is unknown but Aiello suggests that it is due to the presence of free tryptophane that has been separated from the fibrin in the C.S.F. by the action of autolytic enzymes. A consideration of the work of Fildes and Knight (1933) on the relation of tryptophane to the growth of bacteria may be of some significance. They have shown that tryptophane is essential for the growth of certain bacteria in vitro, whereas others will grow in media which contain none; the latter, they consider, are able to synthesise tryptophane. Examining a culture of human tubercle bacilli, which for years had grown in the absence of tryptophane, they found the substance in the bacterial bodies and therefore concluded that this organism can synthesise it. In view of these findings, therefore, one might put forward the tentative suggestion that the tryptophane reaction in the clear cerebro-spinal fluid from cases of tuberculous meningitis depends upon the presence of tubercle bacilli in that fluid.

SUMMARY AND CONCLUSIONS

An account of the tryptophane reaction in the cerebro-spinal fluid is given. The whole test can be performed in 20 mins. It is suggested that the tryptophane is synthesised by tubercle bacilli in the fluid. The test is inapplicable in purulent, hæmorrhagic, or xanthochromic fluids—a "false positive" reaction being given. In all, the C.S.F. from 172 consecutive cases of various diseases was studied. In 30 out of 32 cases of tuberculous meningitis the reaction was positive. In all the remaining 111 clear fluids the test proved negative.

In a clear cerebro-spinal fluid, therefore, a positive tryptophane reaction is highly characteristic of tuberculous meningitis.

I am indebted to Prof. A. M. Kennedy for his help in the preparation of this paper.

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ANÆSTHESIA FOR INTRACRANIAL OPERATION

A NEW TECHNIQUE

BY PHILIP AYRE, M.R.C.S. Eng.

ANÆSTHETIST TO ROYAL VICTORIA INFIRMARY AND NEWCASTLE GENERAL HOSPITAL; AND HON. ANÆSTHETIST TO BABIES' HOSPITAL, NEWCASTLE-UPON-TYNE

THE greatest bugbear of the neurological surgeon is vascular oozing, which may so obscure the field of operation as to render his task difficult, or even impossible. In anæsthesia for intracranial operations it is the imperative duty of the anæsthetist to employ a technique whereby congestion and vascular oozing are reduced to a minimum.

At the present time three methods are commonly used:

(*a*) Local infiltration with Novocain only.
(*b*) Basal anæsthesia with Avertin combined with local infiltration; and
(*c*) Nitrous oxide and oxygen administered by the endotracheal technique.

Of these three methods, the first is undoubtedly the best, but the mental strain is too great for most patients and many surgeons. The second method is quiet and relatively free from vascular congestion, so long as the airway is kept free—not always an easy matter. It has the disadvantage that the basal anæsthetic may wear off before the operation is finished, in which case general anæsthesia has to be administered in addition. There is also real danger that an unexpected severe hæmorrhage may so deplete the patient's vitality that a light basal narcosis suddenly becomes transformed into a dangerously deep coma, and the anæsthetist can do very little about it. In any case, the respiratory and other vital medullary centres may already be depressed by intracranial disease, and I prefer to employ light premedication, such as Omnopon gr. ½

with scopolamine gr. 1/150, or atropine gr. 1/120 an hour before operation.

The third method, endotracheal nitrous oxide and oxygen, has the very great advantage that perfect control may be exercised over the patient, while maintaining a light stage of anæsthesia. Indeed, Magill's inhalational endotracheal technique represents the greatest advance made in anæsthetic technique during the present century. Unfortunately, nitrous oxide administered by the "closed" technique always creates a certain amount of vascular congestion, even with the most skilful administration: this congestion may be negligible in general surgical procedures, but in an intracranial operation the resultant vascular oozing may seriously interfere with the success of the operation, besides endangering the life of the patient.

The ideal medium for intracranial anæsthesia is, in my opinion, the Magill wide-bore endotracheal tube, while the circuit should be open to the outside air, in order to reduce congestion to the minimum. The following method devised by myself provides what is virtually "open" anæsthesia, without any rebreathing bag, expiratory valve, or other obstruction to free respiration. By this method the patient breathes ordinary fresh air, supplemented by a continuous flow of oxygen at the rate of three or four litres a minute, to which is added the minimal amount of ether or chloroform vapour to maintain anæsthesia.

The apparatus required is very simple, and consists of a metal T-piece connected by a short piece of rubber tubing, and a metal angle-piece, to a Magill endotracheal tube (Fig. 1). One limb of the T-piece is connected to Boyle's or any apparatus delivering a continuous flow of oxygen with ether or chloroform vapour. The other limb is open to the outside air, and forms an outlet through which to and fro respiration takes place. To obtain the best results, a length of rubber tubing not less than one centimetre in inside diameter should be attached to the outlet; this may be attached by means of adhesive strapping to some convenient part of the anæsthetic table. A thin piece of gauze, similarly attached near the open end of the tube, will be blown to and fro by the patient's respirations, thus serving as a useful indicator to the anæsthetist.

The principle is similar to the Clausen-Evans airway for intrapharyngeal anæsthesia. In theory, the tubing attached to the outlet forms an obstruction to respiration; but, in practice, this appears to be of no significance. Indeed, the quietness of respiration and absence of vascular congestion resulting from the T-piece technique have been a revelation to myself and others who have witnessed it. The objection that chloroform and ether are toxic agents is also not borne out in clinical practice; patients anæsthetised by this method make an exceptionally good post-operative recovery, and less shock is seen at the end of a long operation than when nitrous oxide and oxygen have been administered. The reason is not far to seek. With the T-piece method the patient has free communication with the outside air, and is consequently able to breathe under practically normal physiological conditions throughout the longest operation. Lastly, and perhaps most important of all, the relative absence of vascular oozing ensures that the patient loses as little blood as possible.

CASE REPORTS

The following are the accounts of three intracranial operations on patients anæsthetised by the T-piece technique; two of these were consecutive.

CASE 1.—A woman aged 38. Operation (Dec. 24th): extirpation of adenoma of pituitary gland. Premedication: atropine gr. 1/120 an hour before operation. Induction: evipan sodium 4 c.cm. followed by gas-oxygen, ether. Subsequent anæsthesia: oral intubation with size 8 Magill tube. Oxygen with minimal chloroform by T-piece technique for 50 minutes, while diathermy was being used. Oxygen with minimal ether during remainder of operation.

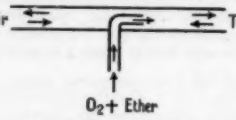

FIG. 1.—The T-piece.

Remarks.—Despite the fact that she was a big, obese woman, the operative field was remarkably free from vascular congestion. The tumour was enucleated without difficulty, the operation being completed in 2 hrs. 10 mins. At the end the blood pressure was only 3 mm. lower than at the start; her colour was excellent, and there was no sweating or pallor. The respiratory rate remained constant throughout. The pulse-rate was rapid, but not unduly so considering the magnitude of the operation (Fig. 2).

Progress.—She recovered consciousness less than an hour after operation; vomited once, very slightly. Next morning she was bright and well; the nursing staff were emphatic that her general condition was better than in other similar cases. Subsequent recovery was uninterrupted and without complications.

CASE 2.—A youth aged 19. Dec. 23rd: section of sensory root of fifth nerve for pain in area of distribution of the left trigeminal nerve, after tooth extraction some months before, and complicated by what was thought to be a carcinoma involving the temporal bone. Premedication: omnopon gr. ½ with atropine gr. 1/120 an hour before operation. Induction: evipan sodium 6 c.cm. followed by gas-oxygen-ether. Subsequent anæsthesia: nasal intubation by "blind" method, a size 7 Magill tube being used. Oxygen with minimal chloroform administered by T-piece technique throughout operation.

Remarks.—On opening the left middle fossa, extensive carcinomatous growth was found. The tumour had broken

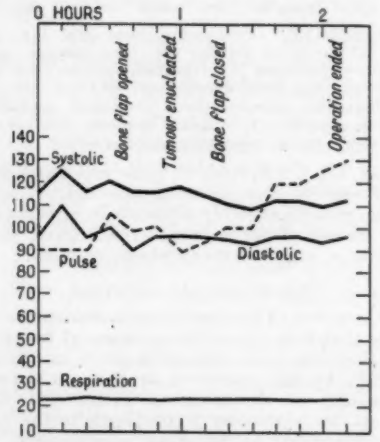

FIG. 2 (Case 1).—Operation chart showing blood pressure, pulse- and respiration-rate during intracranial operation.

through the temporal bone and was so widespread that operation by this route had to be abandoned. After closing the opening he was turned over on to his face and the posterior fossa explored. The operative field was unusually dry, and the sensory root of the fifth nerve was exposed and divided with ease. At the end of the operation, which took three hours, his general condition was very good. The chart readings remained at a constant level, except during the period between the two operations, when he was being turned over on to his face (Fig. 3).

Progress.—He was able to talk rationally half an hour after the operation. He vomited once only, and subse-

quent recovery was uneventful. Naturally the ultimate prognosis is bad.

CASE 3.—Another patient with trigeminal neuralgia was operated upon (through the middle fossa) in a similarly successful manner. The patient was a thick-necked purple-faced man of 74, of the type that usually puts up a strenuous resistance to general anæsthesia. He was induced with evipan sodium, and a little chloroform on

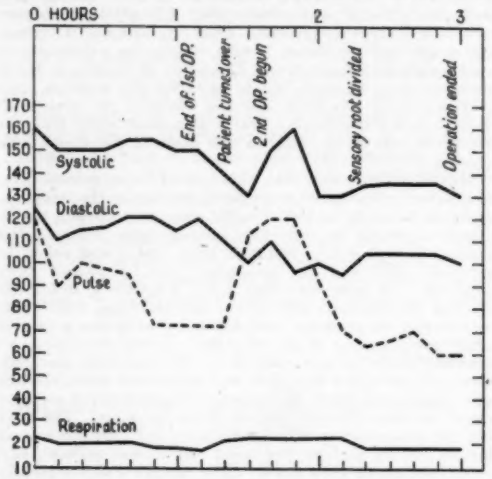

FIG. 3 (Case 2).—Operation chart during intracranial operation.

an open mask. The operation lasted two hours, during which 2 drachms of chloroform were given by the T-piece. This was rather less than the amount usually required. This patient gave no trouble whatsoever, and was sitting up in bed next morning reading the paper. Ten days later he was discharged from hospital completely cured.

OTHER APPLICATIONS

The T-piece technique may also be employed as an alternative method of endotracheal anæsthesia in other surgical operations, when closed gas-oxygen anæsthesia is contra-indicated. It is especially valuable in operations for repair of hare-lip or cleft palate in newly born babies and young children. Oxygen with minimal ether is administered, and the excellent colour and easy respirations compare most favourably with the ashy-grey pallor and rapid breathing sometimes seen when nitrous oxide is administered to young babies.

CONCLUSION

I do not suggest that chloroform or ether should replace nitrous oxide-oxygen for routine anæsthesia. The non-toxic properties of nitrous oxide render it a most valuable anæsthetic agent, *so long as it is reserved for suitable cases*. After all, it is the duty of the anæsthetist to adapt the anæsthetic to the patient, not the patient to the anæsthetic; and there are occasions when long-continued anoxæmia may, ultimately, harm the patient more than the very slight toxic effects of a competently administered ether or chloroform anæsthetic. Cyclopropane is outside the scope of this article, since it is quite unsuitable for intracranial anæsthesia. Vinyl ether is a possibility, but is still in the experimental stage.

I am greatly indebted to Mr. A. R. D. Pattison, neurological surgeon to the Newcastle General Hospital and the Sunderland Corporation, for allowing me to publish the case records. A special T-piece, as described in the foregoing paper, may be obtained in two sizes from Messrs. A. Charles King, 34, Devonshire-street, London, W.

Clinical and Laboratory Notes

VITAMIN B_1 AND DIPHTHERIA

BY B. A. PETERS, M.D. Camb., D.P.H.
MEDICAL SUPERINTENDENT TO THE HAM GREEN HOSPITAL, BRISTOL; AND
R. N. CUNNINGHAM, M.Sc., Ph.D. Lond., A.I.C.
RESEARCH BIOCHEMIST AT THE HOSPITAL

THE clinical resemblance between the late stages of diphtheria poisoning and beri-beri is very obvious, as both show anorexia, circulatory failure, and polyneuritis. On the supposition that the diphtheria toxin might destroy vitamin B_1 in the organism, feeding experiments with vitamin-B_1 concentrates were employed in this hospital in 1931 during convalescence, but the results showed that the vitamin B_1 given in this form had no effect on this condition. Russell (1936) showed that in cases of polyneuritis due to other causes, the parenteral administration of vitamin-B_1 concentrates was successful in curing the condition, although giving it by mouth was unsuccessful. The work of Prof. Peters and his colleagues (1936) showed that vitamin B_1 was concerned in the later oxidation changes of glucose and if this vitamin was deficient, an increase of pyruvic acid could be demonstrated in the tissues and blood of experimental animals.

On these grounds we considered that a further investigation on these points might be of value, especially as Hector (1926), working in this hospital, showed there was a considerable defect in the storage and the ability of the tissues to utilise glucose in diphtheria. We therefore carried out a series of experiments on animals and a clinical investigation.

ANIMAL EXPERIMENTS

One series of analyses was carried out on normal guinea-pigs bled to death. Another series of guinea-pigs was given 4 minimum lethal doses (m.l.d.) of diphtheria toxin (kindly supplied by Dr. R. A. O'Brien) and estimations of pyruvic acid were made on the blood taken shortly before death.

For the pyruvate determinations, blood was deproteinised by precipitation with trichloroacetic acid (Thompson and Johnson 1935) and pyruvic acid estimated in the filtrate colorimetrically by the 2·4-dinitrophenylhydrazone method (Peters and Thompson 1934).

We then attempted to produce the chronic form of the disease by giving 4–12 m.l.d., followed four hours later by 750 units of concentrated antitoxin, which prevented death in the animals given not more than 4 m.l.d. of toxin, recovery taking place slowly. The survivors showed no polyneuritis; one of these was bled after 14 days and the pyruvate estimated. The results are given in the Table.

Pyruvic Acid (mg. per 100 g. blood)

Normal animals.	Animals given 4 m.l.d. toxin.	Animals given toxin + antitoxin.
3·18	3·45	4·34 (12 m.l.d. toxin).
3·11	2·40	3·34 ,, ,,
3·63	..	3·15 (4 m.l.d. toxin).

Figures from the injected animals showed no appreciable deviation from the normal figures.

The heart and leg muscles of some of both the normal and injected animals were tested qualitatively

for pyruvate by means of sodium nitroprusside (Case and Cook 1931). Except in one or two isolated cases, the reaction was always negative.

CLINICAL EXPERIMENTS

Examination of the bloods of two normal persons and two severe cases of diphtheria suffering from paralytic sequelæ were also examined, the results were :—

	Mg. pyruvic acid per 100 g. blood.		
Normal	1·05	....	1·26
Paralysis cases ..	1·44	....	2·18

Again no considerable alteration from the normal was shown.

A series of 10 severe cases of diphtheria was given sub cutem daily doses of 560 units of vitamin-B_1 concentrate (Roche Products Ltd) from the seventh to the twenty-eighth day of disease. This treatment had no effect on the incidence of paralysis, as two had paralysis of the palate and ciliary muscles and two others showed an additional paralysis of the pharynx and diaphragm, both of which terminated fatally—one after a week in a Drinker respirator and the other very suddenly.

CONCLUSIONS

It is thus obvious from the experimental and clinical results that the stage of glycolysis in which vitamin B_1 is concerned is not affected by the diphtheria toxin and no benefit arises in this condition from its administration.

We are indebted to the Sir Halley Stewart Trust for grants towards the expenses of this work, to Dr. D. M. Stone and Dr. R. T. Cooke, of the Department of Preventive Medicine, Canynge Hall, Bristol, for carrying out the injections on the guinea-pigs, and to Mr. F. E. Needs, Bristol city analyst, for allowing us working space in his laboratories.

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OSTEOMYELITIS

By Walter Broadbent, M.D. Camb., F.R.C.P. Lond.
CONSULTING PHYSICIAN TO THE ROYAL SUSSEX COUNTY HOSPITAL, BRIGHTON

Osteomyelitis is a fulminating disease, which nearly always starts in an epiphysis. Since the epiphysis is near a joint, it may be mistaken for rheumatic fever with disastrous results. I have in past years seen in consultation two fatal cases of purulent pericarditis due to this error. In one, a boy of 15, the lower epiphysis of the femur was involved, and it should have been easy to diagnose, as the swelling was all above the knee-joint. In the other, a child of 3, the osteomyelitis had started in the upper epiphysis of the femur, and must have been obscure at first, though it was clear when I saw it, there being a fluctuating swelling, and the femur was loose from its head.

It should be easy to distinguish osteomyelitis from rheumatic fever, since, at the onset, only one point is involved, and that near a joint and not in it. The face is flushed, the tongue dry, the temperature high, and there is usually delirium at night; whereas, in rheumatic fever more than one joint is painful, the face is pale, the skin moist, the tongue large and flabby, the temperature rarely above 103° F., and delirium very unusual.

As illustrating the pace at which osteomyelitis progresses, I will quote two cases.

Many years ago at the Royal Sussex County Hospital a child of 10, who was convalescing from a minor ailment, developed a temperature of 104° F. on my visiting day, and complained of pain in his ankle. I found a very tender spot over the lower epiphysis of his right fibula. Diagnosing acute osteomyelitis, I told the house physician to send for a surgeon at once. The house physician, it being his afternoon off, neglected to send for the surgeon until next morning. By that time the whole of the lower half of the fibula was inflamed, and it ultimately came away as sequestra, the child being in the hospital for about four months.

The other case was that of a boy of 15 at school, who complained of feeling ill after lunch one day. His temperature was found to be 105° F. He was put to bed, a provisional diagnosis of influenza having been made. His temperature at 6 P.M. was still 105°, and I was asked to see him. He had no headache, but he looked very poisoned; his pulse-rate was 120. I found a small red swelling on the inner side of the left os calcis, which was very tender on pressure, and decided that it was a case of acute osteomyelitis of the os calcis. I had him moved to a nursing-home at once, and Mr. G. W. Beresford operated. He found already a little pus and some bare bone, though only six hours after the onset. He trephined a piece about the size of a thimble out of the os calcis. The next day the temperature only went up to 102°, on the second day to 100·2°, and by the third day it was normal, and never rose above that again. The wound was completely healed in five weeks, and the boy was able to walk about.

Contrast this second case with that of a boy sent into the Brighton Infirmary as an acute rheumatism on the sixth day after he had begun complaining of pain in the right heel. Dr. S. J. Firth then rightly diagnosed acute osteomyelitis of the os calcis, and the bone was cut down on and drained. Unfortunately, with the six days' delay, a septicæmia affecting the bones had started. An acute osteomyelitis of the right ulna developed, and some days later the left iliac bone was also attacked. The ulna and the ilium were, of course, treated surgically, but the boy was desperately ill, and was only able to leave his bed after nine months. He will be a permanent cripple with a deformed os calcis, an ankylosed hip-joint, and an irregular newly formed ulna.

It is really quite as important to operate at once on acute osteomyelitis as on a perforated appendix.

LEPTOSPIRAL JAUNDICE OCCURRING NATURALLY IN A GUINEA-PIG

By Neil Mason, M.B. Liverp., D.P.H.
GARRETT RESEARCH FELLOW IN BACTERIOLOGY, UNIVERSITY OF LIVERPOOL

On Dec. 2nd, 1936, a batch of twelve guinea-pigs arrived at the City Laboratories, Liverpool, from a dealer. The following morning one was found dead showing yellow staining of the ears and feet. A post-mortem examination revealed jaundice and petechial hæmorrhages into the skin, hæmorrhages into muscle and fasciæ, and "butterfly" hæmorrhages in the lungs. Active leptospiræ were demonstrated by dark-ground illumination in tissue emulsions made from the liver and kidneys.

A guinea-pig from stock was inoculated intraperitoneally with 1 c.cm. of liver emulsion. This animal developed jaundice in five days and died in six, with an exactly similar post-mortem picture to that of the

first guinea-pig. Leptospiræ morphologically similar to *Leptospira icterohæmorrhagiæ* were isolated in pure culture from the heart-blood of both animals and were serologically identical with *L. icterohæmorrhagiæ*.

Source of the Infection.—In reply to questions the dealer stated that there had been no case of jaundice amongst his staff or dogs, that the food and water-supply of the guinea-pigs were protected against contamination by rats, but that about ten days before the animals were sent to Liverpool rats had broken in and killed two or three guinea-pigs. The infection was therefore most probably derived from a rat at the dealer's, but there were no signs of injury to the animal, and there is insufficient evidence to decide whether it was acquired from a rat-bite or through contact with infected rats' excreta.

Comment.—In the study of leptospiral infections guinea-pig inoculation plays a very important part. The results of inoculation of *L. icterohæmorrhagiæ* have not produced entirely uniform results. Taylor and Goyle (1931) failed to infect several guinea-pigs with blood and urine from undoubted cases of Weil's disease. I have had experience of five cases where inoculation of emulsions of rat kidney in which active leptospiræ were seen by dark-field examination failed to produce fatal infection in guinea-pigs. When these animals were killed later their sera were found to agglutinate *L. icterohæmorrhagiæ* in dilutions varying from 1/30 to 1/300. These failures may have been due to low virulence of the strains, but they may also have been affected by the immunity of the guinea-pigs which might conceivably have resulted from naturally acquired infections. Schüffner (1928) mentions the possibility of the spread of leptospirosis in guinea-pig stock by unknown means. I have been unable to find any record of a natural infection in guinea-pigs, and the importance of recognising that it does occur has seemed to warrant that this case should be placed on record.

I desire to thank Prof. H. D. Wright for the facilities and help given.

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MEDICAL SOCIETIES

SOCIETY OF MEDICAL OFFICERS OF HEALTH

AT a meeting of the Fever and School Medical Groups of this society, when Dr. H. S. BANKS, vice-president of the fever group took the chair, a discussion on

The Control of Whooping-cough

was opened by Dr. A. B. DONALD. He first summarised the reasons for believing that whooping-cough was due to *B. pertussis*; the bacillus, he said, was serologically one specific type and while almost constantly present in the acute stages of the illness, was absent in other illnesses and in health. Except in very few cases, mostly very young infants, specific antibodies to the bacillus developed in the blood in the later stages of infection. The period of infectivity coincided with the period of expectoration of the bacillus as found by the cough plate method.

Pure cultures injected intratracheally into apes produced an illness similar to pertussis. Furthermore, when pure cultures of *B. pertussis* had been instilled into the nasal cavities of 4 volunteers 2 developed typical whooping-cough while the other 2, who had been protected with Sauer's vaccine, did not. On the other hand, Stocks had shown that the epidemiology of the disease was somewhat similar to that of measles; the infectiousness, the solid immunity, the interstitial pneumonia, the demonstration of inclusion bodies in penumonic lesions and degenerative lesions of nerve ganglia were stated to be indications of a virus infection. But hospital experience showed that pertussis seldom gave rise to cross-infection in a ward as measles did; and if the organism was a secondary invader why was it so constantly present in the early stages?

In the belief, then, that the infection was solely due to *B. pertussis*, the speaker discussed the methods in use for the diagnosis of pertussis and the results obtained at the North-Western Hospital. Dr. Donald had been using three specific diagnostic tests. The first of these, the cough plate, was the principal and only certain method of early diagnosis; in this the patient coughed on to a Petri dish containing the Bordet-Gengou medium of potato-extract, glycerol, agar, and defibrinated blood, the latter being present in a proportion of 50 per cent. as lower concentrations were not reliable. The plate was held about 4 in. from the mouth and exposed to a number of barks. The colonies were subcultured and then, typically, looked like a streak of aluminium paint. The organisms were emulsified for agglutination tests and also stained by Gram's method, showing the short cocco-bacilli in clumps like a thumb print. Dr. Donald showed by slides that a fair number of positive plates were obtained in the fourth week of infection. Negative dismissal plates had been used as a basis for the early transfer of children to the convalescent hospital.

The complement-fixation test had been done on the serum of every patient admitted to the whooping-cough wards and had been a very useful method of diagnosis in late cases. It served to indicate the approximate duration of the disease, being negative during the first two weeks, doubtful or weakly positive in the third and usually positive from the fourth week onwards with a rising titre to the seventh or tenth. The antibody response was usually delayed in patients who developed secondary broncho-pneumonia, but even they eventually gave a positive complement-fixation test. As the test was found to be negative in 8 convalescent cases by the thirteenth week on average, it was thought to be probably only positive during active infection. In 1934 Bernholdt-Thomsen had stated that the specific antibodies only showed that the subject had recently been under the stimulus of the specific antigen, and not that he had recently suffered from infection. This had not been borne out by Dr. Donald's experience. The test appeared, therefore, to be specific for active whooping-cough with a few exceptions. About 30 to 40 sera giving strongly positive complement-fixation tests were tested for agglutinins, but all except one were completely negative although different strains and various methods of incubation were tried.

Skin tests performed by intracutaneous injection of a killed vaccine, containing a thousand million organisms per cubic centimetre, had confirmed the

opinion that skin tests done with the whole organism were of little value. No evidence of an initial leucopenia had been found from the blood counts carried out as a routine on admission, but a leucocytosis with relative lymphocytosis had been found in practically every uncomplicated case. The return to normal in cases of whooping-cough was very slow. In July, 1936, Bell and Gold had shown that in contrast to other infectious diseases, the sedimentation-rate was retarded during the acute stages of whooping-cough. Dr. Donald had confirmed this in 46 cases and considered the test was of value as an early diagnostic sign.

Dr. W. GUNN said that while bacteriologists were agreed that the Bordet-Gengou bacillus was invariably associated with whooping-cough they were not certain about the possibility of an associated virus. Some American workers had injected filtered material into the trachea of apes and produced a catarrh which might correspond to the initial catarrh of pertussis. The application of Dr. Donald's work lay in assisting early diagnosis. The policy of the London County Council schools was no longer to put schools or dormitories into isolated quarantine but to put the children under observation and remove them as soon as symptoms appeared. This policy was successful in day schools but might have to be revised for measles and pertussis in the resident schools. Children with whooping-cough might be infectious for from one to three weeks before they were excluded, by which time the disease had a firm hold on the school. He had known the infection to persist for months or even a year, not in epidemic form but in three or four cases every few weeks. He had recently been trying the cough plate method. His difficulties differed from those of the bacteriologist: the schools were in country districts, the plates had to be kept cold before exposure and were liable to break in transport. A package was being devised for taking Petri dishes so that they could be sent by post in this country as they were in Denmark. Special staff was required to handle the plates and to collect the product of the coughs on them. He thought that soon the plate method might well be used extensively in schools. Positive plates had been obtained in about one-third of the cases at the fourth to sixth weeks and had been observed up to the twelfth, but that did not necessarily mean that the children were still infectious.

Dr. A. R. THOMPSON described his experiences with the skin test. Vaccines of pertussis would only cause pustules which were of no significance; he had consequently tried the experiment of using non-pathogenic bacteria of the same size; for this he had used *B. prodigiosus* and had obtained much better reactions. He had also tried endotoxin solutions. In his experience the attack-rate was not high and the infection did not go round wards; he thought that where that happened the possibility of an undetected case keeping up the infection should be considered. The collecting of material on plates was so difficult that he had tried inducing coughs in order to obtain an early diagnosis.

Dr. T. P. PUDDICOMBE wondered what percentage of whooping-cough cases never whooped; practitioners generally insisted on waiting for the whoop's appearance before making the diagnosis. In schools the patients were still isolated for six weeks after the onset of cough and contacts for three. The child who was out and about often progressed well while the child who was carefully treated developed broncho-pneumonia.

Dr. R. CRUICKSHANK said that the bacteriological work of pertussis was not easy; much depended on the technique of producing a really good medium, for instance, and blood was difficult to acquire; the actual picking off of colonies needed long experience. He considered that to say that a child with a positive dismissal plate was not infectious was to deny all that we knew of carriers; the carrier need not transmit the illness but must be regarded as a potential source of infection.

Dr. A. TOPPING pointed out that there were avirulent diphtheria bacilli; the presence of *B. pertussis* did not therefore necessarily imply infectivity. Hospital treatment of pertussis could not be as extensive as they wished while public opinion thought cases had to be kept in so long.

Dr. BANKS said he was glad that the difficulties of the cough plate method had been stressed; he had found it unreliable except in the hands of a few experts. He had only obtained positive plates in 20 per cent. of cases, although he had the help of a good laboratory. He would like the bacteriologist to tell other workers which details were of vital importance in the technique; even after that, special experience would, he believed, be necessary for the work. He asked whether the time had not come to repeat Madsen and Sauer's work on preventive inoculation; resident schools were the ideal place for the experiment. At the Park Hospital oxygen-carbon dioxide inhalation had been tried as a form of treatment. Dr. Muir had tried oxygen with 7 per cent. CO_2 to produce deep breathing for ten minutes three times a day, thinking that it might help to clear away mucus from the bronchi and to prevent broncho-pneumonia. He had been unable to draw any definite conclusion from those results, but the inhalations were apparently of real value for whooping-cough cases which failed to resolve. If the method prevented bronchiectasis as a sequela it was doing something. The carbon dioxide caused spasm and cough and could be used to induce a cough, say, before a meal.

MEDICO-LEGAL SOCIETY

AT a meeting of this society held on Feb. 25th, Mr. C. AINSWORTH MITCHELL, D.Sc., the president, being in the chair, Mr. PAUL C. DAVIE read a paper on

Silicosis: An Administrative Experiment

He put forward the suggestion that the administrative structure of certain schemes made under the Workmen's Compensation (Silicosis) Acts might with advantage be extended. After giving a brief description of the Acts and the schemes made under them, the speaker confined his attention to two schemes, which he aptly termed the "fully developed" schemes, for the refractories industry and the sandstone industry. Under each of these schemes the whole industry was formed into a company which was responsible for meeting all claims for compensation in respect of workmen certified to be suffering from silicosis or silicosis with tuberculosis, or to have died from one of these diseases. Claims were made against the whole industry, represented by the company, and not against an individual employer, and were met out of a fund subscribed by the industry. Medical certificates were given only by a medical board, appointed by the Secretary of State, and claims were decided by an unpaid joint committee consisting of three employers' and three workers' representatives, with an independent chair-

man. By these means the usual court procedure for settling claims was entirely eliminated and, so far as he knew, this administrative structure was without precedent. A remarkable feature of these two schemes was the smoothness with which they had worked during 12 years in the case of the refractories industries scheme and 8 years in the case of the sandstone industry scheme. The formation of such a scheme depended on the agreement of the industry concerned, and its smooth working was possible only with the active coöperation of its members. Although one industry for which such a scheme had been proposed had turned it down, it seemed possible, by suitable grouping, to extend the principle of the "fully developed" scheme to industries in which at present a partially developed scheme applied. The speaker emphasised the important effect such a scheme must have in urging an industry to adopt and improve all possible means of prevention. The speaker discussed the finality of the certificate of the medical board, and commented on the possibilities for research into the course of the disease from the records and material collected. He suggested that the system of medical boards might be extended to cover other diseases.

In the course of discussion Dr. S. W. FISHER of the Mines Department referred to the unequal distribution of silicosis amongst workers in coal-mines in this country, and suggested that this might be an obstacle to the adoption of a fully developed scheme for the coal-mining industry.—Dr. G. SLOT referred to the organisation for silicosis in South Africa, and Mr. DAVIE, in his reply, said that in this country we owe much to the example and published experience of the South Africans and to the International Conference on Silicosis held in Johannesburg in 1930.

BRITISH PSYCHOLOGICAL SOCIETY

MEDICAL AND EDUCATION SECTIONS

AT a joint meeting of these sections, held on Feb. 24th, the chair was taken by Dr. H. CRICHTON-MILLER, president of the medical section. A discussion on

Sex Education

was introduced by Dr. SUSAN ISAACS. She emphasised that sex education was by no means the same thing as sex instruction, and that the problem was not simply one of ignorance or knowledge of a series of external facts. The child's feelings, wishes, relations to people, and aims in life were involved in sex education at all ages. The object of sex education was to foster right attitudes, wisdom, and happiness. Moreover, it went on all through life, whether conscious or not. The question was not whether such education should be given but how it was to be given. The child brought deep emotions to the problem. The relation between the two parents was of overwhelming importance to him, but he was concerned not with the actual act but with whether what father and mother did together was good or bad in the sense of his own feelings and fantasies: whether it was life-giving, loving, and creating or destroying and hating. His impulses and his experiences prepared him for knowledge of the genital act. The union and satisfaction at the breast prepared him for genital union and satisfaction. To put pegs into holes was a profound natural impulse of little children. Apparent ignorance was not a result of lack of experience and opportunity but of profound anxiety. Many motives entered into that façade of ignorance: the boy's love of his mother and fear of his father both played their part. Little children often fantasied that babies were made from food or fæces, and their feeling about it was of great importance. This linked with the breast experience. Penis-envy in the little girl was a factor, but was not a simple thing, being linked with anxiety about the feminine function and fear of its frustration. Equally important was the child's actual experience of the day-to-day ordinary relations of his parents. Often children who knew quite well what happened in sexual intercourse, but had good reason to believe it did harm, showed exaggerated infantile theories, especially sadistic ones. The parents' feelings in teaching the child were obviously very important: shame, solemnity, reticence, or a deep belief in the goodness of sexuality. The child's understanding worked less easily here than anywhere because of conflict and emotion.

To the child under 9 or 10 with incipient knowledge and conflicts, information was worth giving for the sake of indicating to the child the parent's attitude in the matter. Lying and evasion convinced the child of the badness of sexual relations and the badness of wanting to know about them. Association with animals was good because the problem was one degree removed and thus less acute. Another part of sex instruction was the establishment of privacy without a sense of shame. Questions should be answered when asked; the natural period for them was 3, 4, or 5. Later the child often did not want to know about those things, and there should be no forcing in the matter. The emotional content of the questions should be noted. If the child went on asking in a compulsive way, the question had not been adequately answered. Questions could not be answered once for all because the problem was an emotional and not an intellectual one and would inevitably recur. There was little trouble in telling the mother's part; the difficulty was to explain the father's part, which was the core of the child's difficulties. Answering questions helped, even though he completely forgot the answer, because it showed that there was no objection to knowledge; because it relieved his anxieties about the badness of sexual intercourse; because the sharing was an act of love; and because it built up his faith in his own future and gave him permission to grow. A small child of two had been found standing in front of a mirror, saying reflectively "Rather like a man." Telling about the father's part helped to encourage that attitude of hopefulness. Sometimes it was best if the father explained his own part. The little girl was encouraged by being told that she had an internal organ corresponding to the visible male organ. For small children the parent was the best informant; in later years other people might be better. The child should not be warned not to speak to other children about these things. Children should be allowed a sense of humour. No answer solved all the child's problems, and the difficulty was bound up with the child's total relationships. Nor was the problem solved by little text-books and a few lessons, though these were helpful when they rested on continual loving helpfulness on the part of the parents.

Mr. LYN HARRIS spoke of the necessity of close relationship between home and school so that the attitude of each might be appreciated in the other. There should be a direct continuation of experience and no divergence. The school approach to all questions of knowledge and behaviour was most

important. There should be no sense of taboo and no sense of a conventional conclusion, which had to be reached regardless of the right result for a particular child. The school must have the right attitude to all bodily functions. Coeducation was a great help because the life could be a natural one and an extension of family life. Coeducation must not be forced, but differences should not be smoothed over but taken naturally. The menstrual period should be carefully explained to both sexes in relation to physical exertion. Staffing should be regarded as the right admixture of adults in a non-adult community, and the adults should be living a full harmonious life. Married men and women should be among them. An atmosphere in the school of a really happy married life was of the utmost importance. Class instruction was to be avoided, but in groups under the age of 7 questions might arise which could suitably be discussed: for example, a litter of sandy kittens born to a tabby cat might lead to a natural and useful discussion. Problems cropped up during nature study and the whole thing could be dealt with quite naturally. In the teaching of biology sex teaching should be implicit rather than explicit. Problems involving an emotional attitude should be dealt with personally as far as possible. The library should be well stocked. The whole thing was to treat the matter just like any other approach to knowledge, so that the subject was not set apart, or emphasised or smoothed over.

Dr. W. R. BION thought the subject was apt to be confused by the psychological conflicts of those entrusted with education and the confusion of instruction in the hygiene, anatomy, and physiology of reproduction with a vague attempt to solve the child's difficulties. The two were not easily brought into relation. The child had an arduous task, for he had to deal with a changing environment and changing and powerful feelings and sensations which could be aroused by events without or events within. Nocturnal emissions added to the difficulty after puberty, and feelings of guilt and anxiety were also present and endowed by the child with objective validity. The tone or atmosphere of home or school was most important. Objective difficulties paled into insignificance when the child began to try to deal with his internal feelings and conflicts. The child was highly selective and might remember one sermon holding up sex as horrible while he forgot a score of experiences to the contrary. Dramatisation and objectification further complicated the situation, and others might seize on a child's dramatisation to solve their own conflicts. Emotional maladjustment in teachers gravely affected their influence. Homosexual masters punished what they regarded as homosexual indications; or mother-tied pedagogues urged loyalty to the old school. A child often seemed to try and climb out of his difficulties with one foot in fantasy and one in external reality; it was nearly always the latter which crumbled. Some day educators might come to regard sex difficulties as a matter for education and not for discipline. If only hygiene were involved the matter would be simple, but when a need for psychotherapy came in the stage was set for trouble. Transference and counter-transference provided dangerous elements. Most unexceptional statements might be made, but the child would be aware of the emotional attitude behind them. To hand a boy a book was to set apart sex problems as the only ones that would be dealt with in that way. Any patching up of methods of sex education was likely to be a pernicious excuse for postponing an attack on the fundamental problem, which was the bedevilment of an almost simple matter of psychological development by the psychological parasitism of the adult. By the time school age was reached, sex education had become not a liberating agent but a means whereby was added to his other burdens that of coping with an adult transference. The problem must be looked upon not simply as one of transition from a bad system to a better but rather as a matter of putting an end to an activity that was positively harmful, and substituting for it one that was beneficent.

Miss BARBARA LOW said that the love between the parents often stimulated jealousy in the child. Knowledge should be a liberating thing—but there was another side to it. The lesson of Genesis and of Œdipus Rex was that knowledge was a terrible, dangerous, and alarming thing. To say that knowledge should only be given when asked was putting a great burden on the child, who often dare not ask or dare not face the knowledge he could have.

Prof. THOULESS asked if Dr. Bion thought that only psychologically trained persons should give instruction. This would not be practicable as the first questions cropped up unexpectedly with parents. How far was it true that any normal child would ask questions about sex between 3 and 5? Some children did not ask; what then should the parent do?

Dr. J. A. HADFIELD said that children who had been instructed might completely forget and evolve a fantastic theory of their own. He did not know what the inhibition was. Perhaps a child of 3 did not like to feel it had had that intimate connexion with its mother.

Dr. IRENE YATES thought teachers should have some knowledge of the underlying conflict before children were plunged into dissections after a few weeks at school. This often resulted in complete inhibition of any desire to know any more about biology or sex.—Dr. D. N. HARDCASTLE asked whether the inhibition against knowledge of intimate personal biology was carried over to general biology.—Dr. YATES replied that she had known such a case; a biology course in a medical school had brought up the personal conflicts in great intensity.

Mr. HARRIS, asked to define a "proper" attitude, said he meant one of perfect frankness about all bodily functions, regarding them as part of the ordinary machinery of life.

Dr. JOHN RICKMAN could not understand the danger of knowledge. Information could be given in a disturbing way, he knew, but that was not the same thing, and only partial information was disturbing. Whole information—that which could be comprehended by the child—was not disturbing.

Prof. H. R. HAMLEY thought the keynote of the discussion was the naturalness of imparting natural information. It did not help to tell a boy that wet dreams were natural, but it did help to make him feel that if he regarded them as natural his tensions would be relieved. He agreed that the child sought knowledge rather than trying to flee from it, and that all knowledge should be treated in the same fearless way. When the child felt confidence in the adult he produced his questions.

The CHAIRMAN said that the problem of sex education could not be approached like anything else; it was entirely in a category by itself. The average parent could not explain perfectly naturally to the average child. Every child approached the sex problem from a different point of view, which was why class instruction was such a miserable pis aller. A large number, for reasons of all sorts and kinds, approached sex knowledge with enormous dread.

The mere manner of some parents would dispel the anxiety which was the real problem; the actual information was not the important thing.

Dr. ISAACS, in reply, agreed that it was not the information but the emotional attitude that helped the child. The ignorance of 9, 10, 11 was part of the natural emotional development of the child, and changed again at 12, 13, or 14. The stork had not been invented for nothing. It was easier to think of the stork than the phallus. Often parents who consciously would like to give information were unconsciously frightened and inhibited questions. To initiate the subject, the parent could provide a normal stimulus to questioning by such means as visits to babies or contact with animals. On the whole, jealousy was only serious if it succeeded in separating the parents. When people felt that knowledge was harmful they did not mean knowledge but the unconscious deep meaning of the knowledge.

Dr. BION, in reply, thought the parental part was the most promising approach and that a happy marriage was most important. Humility and affection could make up any amount of defects of technique. Lying was always detected. If ignorant parents would learn with the child they would find a valuable ally in their pupil.

Mr. HARRIS, also in reply, thought that even children who had been wrongly treated at home might be led, by suitable school environment, to realise the simplicity of the great subject of sex.

ROYAL SOCIETY OF MEDICINE

SECTION OF EPIDEMIOLOGY

A MEETING of this section was held on Feb. 26th with Surgeon Rear-Admiral S. F. DUDLEY, the president, in the chair. In a communication on the

Epidemiology of Weil's Disease

Dr. J. M. ALSTON and Major H. C. BROWN said that in 1886 Adolf Weil of Heidelberg had described four cases of a form of infective jaundice which were so similar that he considered them to be of the same disease. In each there was a febrile illness with severe jaundice and signs of renal disease and after a severe illness of relatively short duration recovery was rapid. Weil's belief that he had established a new entity was finally confirmed in 1915 when Inada of Japan demonstrated the causative organism now named *Leptospira ictero-hæmorrhagiæ*. The illness was well known at the time in Japan, occurring in epidemic or endemic form and characterised by conjunctival congestion, muscular pain, fever, jaundice, hæmorrhagic diathesis, albuminuria, and a fairly high mortality-rate; this had been the usual form of the disease in all countries. The leptospira was a highly flexible filament with very tightly wound and rather shallow spirals; at each extremity it was bent over in the form of a hook. The disease was widely distributed and it was likely that now easier methods of diagnosis were available it would be found to be almost universal. The highest incidence of the disease so far had been found in Holland, France, Malay States, Sumatra, and the Andaman Islands. As far as was known at present the disease was absent from Egypt, Arabia, and Persia, and evidence of it in India was scanty. Possibly strong sunlight was an important factor for this was lethal to the organism. In Great Britain the organism was first isolated in 1922 but very few records of its incidence were published until July, 1934, when Fairley showed that the disease occurred comparatively frequently among sewer workers in London. Since then 142 British cases had been authenticated. There were no data in this country from which to estimate the proportion of jaundiced cases to the total number, but in the British army in Flanders, Stokes and Ryle had reported that 60 per cent. did not develop jaundice and Schuffner had found the same percentage in an epidemic in Holland. Alston and Brown had found agglutinins and protective antibodies in the blood of 9 out of 45 London sewer workers who said they had never had jaundice, and similar figures had been recorded among fish workers in Aberdeen. It was probable therefore that the disease was much more prevalent than would be expected from present records. There was no record of a second attack and agglutinins had been found in the blood twelve years after the first.

The spread of Weil's disease was almost entirely due to rats and other rodents which harboured the organism in the kidney and excreted it for long periods without disturbance of their health. The proportion of infected rats was highest among the middle aged and less among the young and old, and the only apparent result to the rat was the production of specific antibodies in the blood. The leptospira had been found in rats in rural and urban districts in almost all parts of the world. In this country the incidence of infection in the brown rat had been reported to be as high as 41 per cent. The only mammals other than rodents which had clearly been shown to harbour the infection in overt and latent forms were the dog and, rarely, the fox. Dogs were therefore possible carriers, but Dr. Alston thought the risk would not be found to be as great as that from rats. It was possible that pigs were sometimes infected, as a butcher had been known to develop Weil's disease 8 days after killing a jaundiced pig. Infection of one human being by another was very rare, but Schuffner believed that a woman had been infected in coitus and Taylor and Goyle that in the Andaman Islands urination on the ground by men with slight infections had helped to spread the disease. The organism was very precarious in its viability. It was killed by salt water or an acid reaction; the fact that infection tended to follow immersion in some only of the canals in Holland was attributed partly to their varying salinity. Weil originally thought that infection entered through the alimentary tract, but Inada came to suspect that it did so through abrasions in the skin. This, Dr. Alston thought, was borne out by the greater incidence among builders than flushers working in sewers. Some cases had followed rat bites and others dog and ferret bites, apparently by mechanical transmission as the dogs and ferrets had just bitten rats. Infection was commoner amongst involuntary than among voluntary bathers in canals, presumably because unpremeditated immersion often caused struggling and let water enter the respiratory tract. Indisputable evidence of alimentary infection was rare. Insects had not been known to transmit the disease. The fatality-rate had been considered to be high at a time when the mild and subclinical cases were not recognised; but in the last 142 cases observed the death-rate had been 15 per cent.

The frequency of infection among men and women depended so much on exposure through their occupation that the influence of sex was obscured, but among fish workers in Aberdeen the percentage infected was the same in both sexes. The incubation time, according to Schuffner, varied from 4 to 19 days, the

majority of the cases occurring between the seventh and thirteenth. The greater number of cases were associated with a few occupations which had rats, dampness, and abrasions in common; fish cleaners, coal-miners, canal workers, gravel pit workers, bathers, and people living in rat-infested houses were those most liable to be affected in Great Britain. The rat infestation of the fish-cleaning shops was due to the fish remnants left lying at the end of the day and leptospira could be found in washings from the tables and floors; this lack of cleanliness was being tackled and prevention should be comparatively easy. Dr. Alston showed a slide of a fungus which only grows on rat fæces and which served as an indicator of rat infestation in sewers; the rats entered through imperfections in the drains; consequently care was being spent on mending the defects. The relation of the *L. ictero-hæmorrhagiæ* to other similar organisms had not been settled; in particular the question whether the non-pathogenic organism *L. biflexa* could become pathogenic remained open.

DISCUSSION

The PRESIDENT mentioned Murgatroid's suggestion that the organism might occasionally establish itself in man and spread from man to man. He asked whether it had been proved that any of the pathogenic species could be established as free-living organisms.

Dr. H. J. PARISH wondered why in a country with our large population and with such a large proportion of the rats infected there were not more cases of Weil's disease. He also wondered why so many cases had been reported among those who fell into canals where presumably rat excreta were greatly diluted while relatively few occurred among fish workers. The possibilities of active immunity were very interesting where other preventive measures were difficult, as, for instance, among miners. Should laboratory workers protect their eyes with goggles?

Dr. J. D. ROLLESTON had read in the French literature of a special meningeal type affecting sewer workers and well sinkers. He asked whether there were more severe and fatal cases in Japan.

Dr. T. WHITE had seen cases in the war and had considered that infection occurred through the alimentary tract after the rats had walked over the food.

Mr. GRAHAM asked whether there was any real reason to think that the disease had been recently introduced into this country. He had been connected with sewage work for 30 years and had only heard of the disease in the last three or four years. He had always boasted before that sewage work was one of the healthiest occupations.

Dr. A. JOE wanted to add brewery worker to Dr. Alston's list of occupations.

Dr. ALISON GLOVER asked how long the pyrexia lasted in the cases without jaundice and whether the black rat was as susceptible as the brown.

Dr. E. W. GOODALL said it was odd that so many cases occurred among fish workers who were in contact with so much salt water; presumably the rats became infected elsewhere.—In answer to his questions Dr. ALSTON said that all but one of the cases among fish workers had occurred in Aberdeen, and that the leptospira only survived about 24 hours in sewer slime; only when the organism was constantly excreted in large quantities was there a risk of infection.

Dr. PERCY STOCKS asked whether rat-bite fever were sufficient title for the disease.

REPLY

Major BROWN, in reply, said that if the disease could not be called Weil's disease it should be called spirochætal jaundice, not infective jaundice which might cause confusion with infective catarrhal jaundice. The organism could be carried by the rat but was not normally to be found in its mouth. Brown rats were more susceptible than black. He had had no experience in this country of cases without jaundice, but from the literature the degree of pyrexia seemed to be slightly less. The sera of the meningeal forms was said to give a curious agglutinin reaction missing the one in ten dilution. He thought that only chance prevented greater incidence: the means of entry as well as the infective material had to be there. There was no doubt that it was not a new disease; only four cases had been reported between 1922 and 1934 while 142 had been found in three subsequent years with better methods.

MANCHESTER MEDICAL SOCIETY

AT a meeting of this society on Feb. 3rd a symposium on

Hæmorrhagic Diathesis

was opened by Dr. J. F. WARD. He said that although the term usually signifies the group of purpuras it was also applied to other conditions in which repeated hæmorrhages occur from capillaries, either spontaneously or as the result of minimal trauma, and included the hæmorrhagic disease of the new-born and hæmophilia. These various conditions differed in respect of hereditary influences, the most frequent site of hæmorrhage, coagulation, and bleeding time, and number of platelets in the circulation. Different figures given for coagulation time by different workers were due chiefly to lack of uniformity and a satisfactory method of estimation.

Hæmorrhagic disease of the new-born was a deficiency disease, since it was satisfactorily treated by injections of whole blood, but the missing factor was not known. In scurvy the hæmorrhagic tendency was clearly due to lack of vitamin C. It was doubtful if true hæmophilia ever occurred in the female sex although cases were reported in which it seemed possibly to have occurred. Foulis and Crawford's case was difficult to explain unless it were due to marriage of a hæmophilic with a female "carrier." Pseudo-hæmophilia had several characters different from true hæmophilia and some of the reported cases were probably examples of inherited purpura. No treatment was known that would cure hæmophilia; temporary arrest of hæmorrhage was satisfactorily obtained by blood transfusions, and in external hæmorrhage, by application of Russell's viper venom, which shortened the coagulation time and could be used in high dilution without diminishing its potency. Timperley and Naish's treatment with egg white or mucic acid was on trial and has given promising results in their cases.

Dr. JOHN F. WILKINSON discussed the non-familial hæmorrhagic states or purpuras. After considering their main features, and classifying them into primary (idiopathic) and secondary purpuras, he dealt in detail with the primary purpuras, represented by Werlhof's purpura hæmorrhagica and by the Henoch-Schönlein purpuric syndrome. The features of purpura hæmorrhagica were, he said, the occurrence of hæmorrhages or purpura in or from the skin or mucous membranes, with a reduction in platelets, prolonged bleeding time, normal coagula-

tion time, and non-retractile blood clot. The initial manifestation might be epistaxis, hæmaturia, hæmatemesis, melæna, or intracranial hæmorrhage. Spontaneous remissions were common and there was a tendency to seasonal onset of symptoms. Dr. Wilkinson discussed the blood changes in this group of purpuras and indicated their importance in association with the clinical findings in making a diagnosis and deciding upon the correct lines of treatment. He assessed the various forms of treatment and demonstrated the extreme value of splenectomy in association with blood transfusion with the aid of case records. The indications and contra-indications for splenectomy and the need for choosing the right moment for operation were then considered. Dr. Wilkinson said that as distinct from these purpuras, the group reported by the Henoch-Schönlein syndrome was less constant. This condition appeared to lie between the urticarias and the purpuras. As a rule the blood findings were normal. Henoch's purpura and Schönlein's purpura were not distinct entities but merely varieties of the same syndrome. Purpura was not the predominating symptom. The condition was usually seen in girls and lasted throughout life with remissions and relapses, but the symptoms might change in any person at different times, the main ones being pyrexia, pains in the joints, gastro-intestinal symptoms (nausea, vomiting, colic, diarrhœa), blood and mucus in the stools, angio-neurotic œdema, and so on. Treatment was unsatisfactory. Dr. Wilkinson concluded with a discussion of the importance of vitamin C in relation to the purpuras.

Dr. WILLIAM BROCKBANK referred to two cases of purpura hæmorrhagica that had responded well to splenectomy and were well several years later.—Dr. C. P. LAPAGE said that he had had good results with potato cream in the treatment of infantile scurvy.—Dr. W. J. S. REID again emphasised the difficulties of estimating accurately the bleeding and coagulation times, and described a method he had employed with success; he also referred to a case of familial telangiectasis under his care.

LIVERPOOL MEDICAL INSTITUTION

AT a pathological meeting of this institution on Feb. 18th, with Prof. R. E. KELLY, the president, in the chair, a paper on the

Œstrin Content of Blood and Urine

was read by Dr. O. VAUGHAN JONES. In the non-pregnant woman, he said, the Graafian follicle was the chief producer of œstrin, whereas in pregnancy the placenta was responsible for the vast quantities secreted. During pregnancy the œstrin content of the blood rose continuously, but the excretion of the hormone in the urine was complicated by the fact that about 90 per cent. of it was excreted in the "combined" form. After the third month there was a rise in the amounts of "combined" form excreted, this rise being more conspicuous after the sixth month. The concentration of the "free" form of œstrin in the urine was low throughout pregnancy, but shortly before parturition the amounts of the "free" form rapidly increased. It was to be expected that any upset of the normal course of pregnancy would be shown by changes in the hormone balance in blood and urine, and the quantities found should be a guide to the viability of the fœtus. The Aschheim-Zondek test was a test for the viability of the placenta, not of the fœtus. When, therefore, the fœtus died in utero the Aschheim-Zondek test could be, and often was, positive—this being probably due to the retention of some active chorion epithelium which maintained the production of prolan. But it had now been generally agreed that the placenta produced œstrin as well as prolan. On this assumption, it seemed likely that the death of the fœtus, which entailed the interruption of the placental circulation, might have an influence upon the hormone level in the blood. It had in fact been found that the blood œstrin fell to a low level when the fœtus died:—

	No. of cases.	Blood œstrin.	Subsequent history.
Normal pregnancy	35	Positive.*	Pregnancy continued.
† Missed abortion	12	Negative.	Macerated fœtuses delivered.
‡ Intra-uterine death	29	23 negative.	Macerated fœtus.
		6 positive.	Fœtus alive.

* Negative = less than one mouse unit in 40 c.cm. blood.

Dr. Vaughan Jones concluded that the blood-œstrin test was a valuable and reliable means of ascertaining the viability of the fœtus. It was essential to discover the amount in the *blood*, for the "total œstrin" in the *urine* of women carrying a dead fœtus did not differ much from that of normal pregnancy.

ROYAL MEDICO-CHIRURGICAL SOCIETY OF GLASGOW

AT a meeting of this society held in the eye department of the Western Infirmary on Feb. 19th, with the president, Mr. G. H. EDINGTON, in the chair, a paper on

The Biomicroscopy of the Fundus Oculi

was read by Prof. A. J. BALLANTYNE. Ophthalmoscopy was, he said, essentially a branch of microscopy, for with the ophthalmoscope they examined structures which were more or less transparent, under varying degrees of magnification, and with various forms of illumination. Since there were many fundus lesions which it was difficult or impossible to explain by histological methods, it was all the more necessary that they should employ every refinement of ophthalmoscopy which made the ophthalmoscope a more perfect microscope. This purpose could be served in two ways—namely, by focal illumination of the fundus, and by the use of filtered or selected light. In the anterior segment of the eye focal illumination was employed (1) by direct illumination, (2) by lateral or proximal illumination, (3) by retro-illumination, (4) by examination in the zone of specular reflection, and (5) by examination in optical section. Within certain limits these methods all had their application in the examination of the fundus. Modern interest in the examination of the fundus with selected or filtered light dated from Vogt's employment of an approximately red-free light to demonstrate that the yellow spot was not merely a post-mortem phenomenon, but could be seen in the living eye. In many other ways the fundus obtained with the red-free light differed from that obtained with the mixed light of the electric bulb, and for most purposes the light of the mercury vapour lamp was a good substitute. An entirely different picture was obtained by the use of a sodium vapour lamp; the bright monochromatic yellow light enhanced the definition of fundus details. Clear definition was further assisted by the fact that the vessels stood out darkly against a pale background. Surface reflexes were abolished and the retina rendered more transparent. Hence deep-seated lesions, especially in the choroid, were more easily seen. The advantages both of focal illumination and of examination with selected light could, he concluded, be obtained without costly apparatus.

NEW INVENTIONS

A SIMPLE EXTENSION APPARATUS FOR FOREARM AND WRIST FRACTURES

In industrial centres such as Sheffield numerous fractures of the forearm and wrist are reduced daily. Anybody who has had to assist and to pull steadily and repeatedly for five to ten minutes, will, I believe, appreciate that it is tiring and often painful work and will welcome a simple mechanical method.

The apparatus shown in Fig. 1 consists of a steel plate in which are drilled numerous holes. Through these are passed two long screws with hooks at one end and butterfly nuts at the other. The apparatus is fixed to the side of the fracture trolley by a strong thumb screw. By reversal of the traction screws the apparatus may be used on either side of the trolley for either arm. The various positions of the holes are to allow reduction with the forearm in mid, supine, and pronated positions, according to the type of fracture. The finger and thumb attachments consist of the raffia snares familiar to most people as Japanese toys, and now obtainable from Messrs. Down Bros., Ltd. (22A, Cavendish-square, London, W.). These snares are slipped over the fingers and thumb and as a result of the method of plaiting, tighten and grip firmly when the distal ends are pulled. To remove them, the extension is released and the two ends of each snare squeezed together in a longitudinal direction, when they slip off easily. The snares are threaded through their ends with ordinary cord and are tied firmly to the traction rods by double knots. The thumb is attached to one rod and the three fingers to the other; in fact, the apparatus replaces exactly the assistant's two hands. These snares are of standard size but in some cases are too small to fit over the thumb; Down Bros. have therefore made a larger snare out of

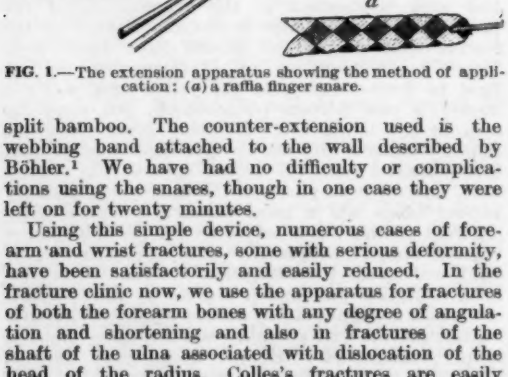

FIG. 1.—The extension apparatus showing the method of application: (*a*) a raffia finger snare.

split bamboo. The counter-extension used is the webbing band attached to the wall described by Böhler.[1] We have had no difficulty or complications using the snares, though in one case they were left on for twenty minutes.

Using this simple device, numerous cases of forearm and wrist fractures, some with serious deformity, have been satisfactorily and easily reduced. In the fracture clinic now, we use the apparatus for fractures of both the forearm bones with any degree of angulation and shortening and also in fractures of the shaft of the ulna associated with dislocation of the head of the radius. Colles's fractures are easily reduced with correct anatomical alignment. By

[1] Böhler, L. (1935) The Treatment of Fractures. Translated by E. W. Hey Groves, Bristol, p. 212.

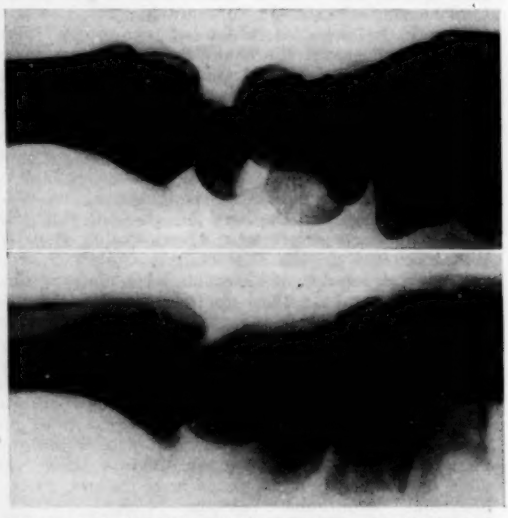

FIG. 2.—Reduction of second degree perilunar carpal dislocation. Above, the separation achieved by extension in the apparatus. Below, after reduction.

passing a wire extension through the thumb pulp, under local anæsthesia, and attaching it by a cord to a traction rod, Bennett's fracture-dislocation of the first metacarpal is suitably extended while the plaster is being moulded correctly round the base of the thumb. When the plaster has set, the extension wire is tied to a wire splint incorporated in the plaster, as described by Böhler, while the extension cord on the apparatus is cut and removed. Fig. 2 shows the degree of extension attained in a case of second degree perilunar carpal dislocation which had occurred three days previously. We had no need to resort to any violent manipulative methods. If one accepts the statement that this type of injury is a result of a dislocation of the distal carpus around the semilunar bone then the obvious way to reduce it is first to separate the carpal bones by extension. Replacement of the carpus is aided by pressing the distal carpal bones—chiefly the os magnum—ventrally and is achieved when the extension is released and the convexity of the os magnum is received into the concavity of the semilunar. This is well shown in the radiograms. Incidentally, the median nerve is in no danger from pressure if this method of reduction is used.

Often while a steady pull—a thing so difficult to maintain manually for any length of time—is acting, one can apply a leg plaster to another case and so save not only energy but also time. A further advantage is that the application of the plaster is made easier with the absence of the hands of the assistant, which, instead of being in the way, may be utilised by soaking and preparing the plaster slabs.

The apparatus was made by a local blacksmith and has at least its simplicity and cheapness to recommend it.

My thanks are due to Prof. Ernest Finch, and to Mr. F. Holdsworth, who is in charge of the fracture clinic of the Royal Infirmary, Sheffield, for permission to publish this article.

RALPH SHACKMAN, M.B. Lond., F.R.C.S. Eng.
Resident Surgical Officer to the Royal Infirmary, Sheffield.

REVIEWS AND NOTICES OF BOOKS

Nostrums and Quackery

And Pseudo-Medicine. By ARTHUR J. CRAMP, M.D., formerly Director of the Bureau of Investigation (1906–1936). Vol. III. Chicago: Press of the American Medical Association. 1936. Pp. 232.

FOR nearly thirty years Dr. Cramp directed a campaign to educate and enlighten the American public about pseudo-medicine. During the early years of his directorship he brought out two volumes of "Nostrums and Quackery" which had a wide circulation and influence. The first volume, published in 1911 with a second edition in 1913, is now out of print. The second volume, published in 1921 and indexing the subject matter of both, is still obtainable. By 1930 sufficient material had been collected for a third volume which only now appears, some time after Dr. Cramp's retirement owing to ill-health. This volume differs from the others in being mainly a factual record, less space being given to the methods of the nostrum exploiter; but there remains in the introduction and in the prefatory notes to the several chapters enough to give even the novice a fair outline of the exploitation of human credulity in the field of medicine.

Dr. Cramp points out that as far as the U.S.A. is concerned the pills and panaceas of to-day cannot rightly be called *patent* medicines; probably not half a dozen of them are really patented. The patent does not meet the vendor's need as it gives him a monopoly for only about seventeen years, and publication of the composition would destroy the secrecy and mystery which are the foundation of his success. In confirmation of this Dr. Cramp quotes this sentence of a letter from a drug journal to druggists:

> "It is practically impossible to prove that the therapeutic claims, made for a preparation whose composition is not known, are 'false and fraudulent' . . . once, however, they are given the formulas, they can get as many doctors as is necessary to testify that the preparations made according thereto are not good for the diseases for which they are recommended."

and the reply of an honest druggist to the effect:

> "That you are afraid of revealing the nature of your preparations to your competitors is absurd. There is no preparation on your list that cannot be matched or bettered by one in the National Formulary of the United States Pharmacopœia. The sale of your preparations, and of others like them, depends on advertising and not on therapeutic value."

The report makes joyful reading in places. There is the story of "Professor Maurice Scholder" who had obtained from a learned Dominican friar in Galicia a scientific secret that was the basis of his discovery for growing hair on bald heads. He asked for specimens of hair to be sent to him, and invariably reported that they were in a seriously undernourished condition. With Dr. Cramp's help he reported in this sense not only on the fur of a platinum fox but on some filaments of twine stained black and brown by Dr. Cramp himself. More poignant is the evidence of a twilight zone in which it has too often proved difficult to distinguish between the quack with a scheme and the visionary with a theory.

The book, although dealing with conditions in the U.S.A., contains instruction of universal application, and Dr. Cramp may well rest content with the fruits of his life-work.

Malaria in Europe

An Ecological Study. By L. W. HACKETT, M.D., D.P.H., Assistant Director, International Health Division, The Rockefeller Foundation. London: Humphrey Milford, Oxford University Press. 1937. Pp. 336. 10*s.* 6*d.*

THE catastrophic results of malaria in Salonika during the war; its appearance as the most terrible epidemic of modern times in Central Russia, and even in Archangel; and the discovery of an epidemic of 5000 cases in Emden on the North German coast, as well as of a few secondary cases in England, have drawn public attention to malaria in Europe. From the studies of Swellengrebel in Holland, Martini in Germany and Central Europe, Missiroli and Hackett in Italy, Balfour, Barber, Rice, and Shannon in Greece, Collins in Bulgaria, and Hill in Spain, there has emerged a uniformity of opinion on the control of malaria which does not entirely conform with the doctrines previously held by the so-called European school of malariology. No better apostle of the new teaching gifted with a vivid style of expression could have been found than Dr. Hackett, whose style is vivid and whose information is up to date.

The puzzling problems which European malaria presents, such as anophelism without malaria, has thrown new light on the ecology of this disease. The epidemiology of malaria is by no means the simple problem that it was formerly thought to be; it involves a study, not only of man, but of his domestic animals, in fact the whole of ecology. No less than five biological races of the typical *Anopheles maculipennis*, which have distinctive markings and breeding habits and which lay different patterns of eggs, have been discovered. These bear the romantic names of *A. typicus*, *A. messeæ*, *A. atroparvus*, *A. melanoon*, and *A. clutus*. The knowledge gained of their habits and distribution is certainly applicable to other species of malaria-carrying anophelines in the tropics—as has already been found in the case of *A. ludlowi* in the Andamans.

A good deal of mystery and even romance is to be found in the story of malaria as already told, and it looks as if there were much more to come. Dr. Hackett has provided a good introduction to this fascinating subject and has shown that Europe is likely to provide a signpost to the prophylaxis of what is popularly regarded as a tropical disease.

Tissue Immunity

By REUBEN L. KAHN, M.S., D.Sc., University of Michigan, Ann Arbor. London: Baillière, Tindall and Cox. 1936. Pp. 707. 34*s.*

IT might be thought that our available knowledge of "tissue immunity" is so meagre that its description might be compressed into a few pages, and the author who undertakes writing a book of 700 pages on the subject shows some temerity. Dr. Kahn's book is almost entirely devoted to descriptions of his own experiments. Though much of the experimental work seems to have been carefully carried out, it is not easy to see in what directions it has added to existing knowledge. The central thesis of the book seems to be that reactions of hypersensitivity (allergic reactions) are an evolutionary by-product of the mechanism of defence against parasitic invasion. This is of course by no means a new conception, and

it has no very obvious advantages over the alternative view that the reaction to non-living chemical agents is the more primitive. Dr. Kahn's book is not likely to be read by any but experts, and we doubt whether they will be impressed with the value of his experiments and views.

Minor Surgery

Third edition. By FREDERICK CHRISTOPHER, S.B., M.D., F.A.C.S., Associate Professor of Surgery at the Northwestern University Medical School, Chicago. London: W. B. Saunders Co., Ltd. 1936. Pp. 1030. 42*s*.

THE distinction between major and minor surgery is rather an artificial one, and it is obvious from the size of this work that Prof. Christopher gives to the term "minor surgery" a wide meaning. The book deals not merely with those minor operations which may be performed in a doctor's surgery or a hospital casualty department, but includes everything except the most formidable surgical procedures. It should appeal to a large number of medical men: the practitioner will find it a valuable guide to the minor operations which are within his scope, and the surgical specialist will be grateful for innumerable practical hints on technical detail. New sections in this edition deal with the healing of wounds, vascular surgery, new methods of treating fractures and sprains, and the pathology and treatment of lymphogranuloma inguinale and glomus tumours. Many of the older sections have been considerably amplified. The illustrations are skilfully chosen and reproduced. The extensive bibliography of current literature is kept well up to date. Prof. Christopher evidently takes delight in discovering, trying, and making known to others the cunning little tricks which contribute to the success of any operation or contribute to the patient's comfort, and his colleagues have good reason to be grateful to him.

Elementary Manual of Physiology

Fifth edition. By R. BURTON-OPITZ, S.M., M.D., Ph.D., Consulting Cardiologist, Lennox Hill Hospital; Consulting Physician, Cumberland Hospital, Brooklyn. London: W. B. Saunders Co., Ltd. 1936. Pp. 442. 10*s*. 6*d*.

Human Physiology

Seventh edition. By PERCY G. STILES, Assistant Professor of Physiology in Harvard University. Same publishers. 1936. Pp. 446. 10*s*.

THESE two books cover, between them, the field of elementary physiology. Dr. Burton-Opitz has written a concise, business-like account of "straight" physiology, of the type required by medical students; it is well illustrated and balanced, and would serve admirably for a first reading of the subject and as a text-book for nurses. The author displays, if anything, too great an anxiety to be accurate as well as brief, and the style suffers in consequence; the book is like tapioca pudding—stodgy, but very safe and very nourishing. Prof. Stiles's work is, by comparison, effortless, and the reader is carried on smoothly and rapidly; from the literary point of view it is a better book. Its scope is, however, different, being more elementary, suitable for schools and the general reader. It is not in any sense a popular treatise, but it presents physiology in relation to everyday life, and contains intelligent discussions of various points of hygiene and of questions like vivisection which certainly add to its value for the reader who may not be studying any other biological or medical subject.

Management of Obstetric Difficulties

By PAUL TITUS, M.D., Obstetrician and Gynæcologist to the St. Margaret Memorial Hospital, Pittsburg. London: Henry Kimpton. 1937. Pp. 879. 36*s*.

THIS book reflects the mature outlook of an experienced American obstetrician on his specialty. His book has a wide scope, for the problems discussed range from those of conception to those of postnatal treatment. As a whole the standard of the sections which make up the volume is high, and the importance of preventive medicine is stressed throughout. The chapter on Cæsarean section is eminently sane and those on the incidental diseases of pregnancy are particularly good. The bibliography is well arranged, with the prevalence of American and German authorities which characterises American work on medicine. The sections which appear to us less satisfactory than the rest are those on the management of occipito-posterior and breech deliveries. The use of Willett's forceps is apparently gaining ground in America; but amniography and aspiration of the uterus in hydramnios are scarcely mentioned. The illustrations are profuse and clear.

British Journal of Children's Diseases

THE January–March issue contains a paper by Dr. Alice Stewart entitled Gastric Acidity in Infants and Young Children Under Normal and Pathological Conditions, with Special Reference to Nutritional Anæmia. The literature she finds shows (1) that there is no evidence of congenital achlorhydria, nor is it present in the healthy child; (2) that gastric acidity may be lowered by any parenteral infection, and especially in chronic gastro-intestinal disease; and (3) that the acidity is lower in infants than in older children. Dr. Stewart's own investigations were carried out on four groups of young children—(*a*) those with iron-deficiency anæmia; (*b*) previously anæmic children, now in good health; (*c*) those with other illnesses; and (*d*) healthy children. She believes that the deficiency anæmias of infancy are caused by pure iron deficiency, and that the impairment of gastric secretion found in the anæmic cases is the result, not the cause of the condition. This low acidity, however, decreases still further the amount of available iron, thus aggravating the condition and preventing spontaneous cure.—In a paper on Schüller-Christian disease, a triad of defects in bones, exophthalmus and diabetes insipidus, Dr. F. R. B. Atkinson has tabulated 103 cases in children up to the age of thirteen years inclusive, on 22 of whom autopsies were held. A bibliography is appended.—Dr. R. de Rohan Barondes of San Francisco contributes a paper on Apple Powder and its Application to Intestinal Disorders. He maintains that apple powder may be substituted for and indeed is preferable to fresh apples in the treatment of acute and chronic intestinal diseases, since the powdered form enables it to be ready for use at all times. Unlike fresh apple it can easily be mixed with milk without causing coagulation or curdling. It does not undergo oxidation with the resulting brown colour as happens in apple pulp. The powder acts quickly in controlling diarrhœas and dysenteries, and in producing normal stools. No ill effects from its use are encountered.

The abstracts from current literature are devoted to tuberculosis.

THE LANCET

LONDON: SATURDAY, MARCH 6, 1937

SPECIFIC PROPHYLAXIS OF INFLUENZA

FOUR years ago it was shown that epidemic influenza is caused by a filtrable virus; and ever since then the question has been—will this new knowledge lead to the discovery of a method of preventive inoculation? The only reasonable chance of controlling the disease lies in raising the immunity of the population; and although the relatively short-lived immunity conferred by one attack does not augur well for any measure of specific prophylaxis, the possession of accurate knowledge of the causation has raised fresh hope. After all, influenza has a definite seasonal incidence and its epidemics run a limited course of two or three months, so that prophylactic inoculation conferring even a transient immunity might be far from valueless.

Quite early in the investigations at the National Institute of Medical Research it was shown that the immunity conferred on the ferret by an attack of influenza, though lasting but a few months, could be restored when on the wane by a subcutaneous inoculation of virus.[1] This route does not lead to infection in the normal animal, and virus administered in this way stimulates afresh the production of neutralising antibody, the titre of which falls with the return of susceptibility. (It is noteworthy however that a ferret containing an appreciable quantity of neutralising antibody in its blood is susceptible to reinfection.) In the past month three important papers on the specific prophylaxis of influenza have been published. F. M. BURNET[2] reports some interesting observations on the infectivity of virus grown on the developing hen's egg for the ferret and mouse. Previously he had shown[3] that serial passage of influenza virus on the chorio-allantoic membrane led to its becoming highly adapted to this medium, so much so that it regularly invaded and killed the chick embryo in 48 hours. He now finds that this egg-passage virus when administered nasally to ferrets and mice causes no symptoms of infection in the large majority of animals and yet gives rise to a solid immunity. Ferrets inoculated with egg virus do not give rise to contact infection and despite the possibility that the nasal instillation of such a strain of influenza virus in man on a large scale might occasionally produce epidemics, BURNET thinks that this method is more likely to be of service in the prevention of influenza than the parenteral injection of living or dead virus. That the danger of creating epidemics by the prophylactic use of living virus on a large scale in the field is a real one is shown by the experience of SHOPE[4] with swine-influenza. He records epidemics in two herds of pigs which were apparently due to the prophylactic administration of living virus intramuscularly, a procedure which had seemed free from risk under laboratory conditions. Impressed by this danger C. H. ANDREWES and WILSON SMITH[5] have concentrated on finding an efficient method of immunisation with killed virus. Their experiments on mice show that mouse-lung virus inactivated by low concentrations of formalin and given intraperitoneally immunises mice almost as well as living virus similarly administered. With a view to using such a vaccine in man they attempted to free the virus of extraneous mouse-protein. Although they accomplished this, the purified virus, when formolised, proved a poor immunising agent even when formolisation preceded purification. However, they carried out a preliminary experiment on human volunteers and showed that formolised mouse-lung virus injected subcutaneously produced an appreciable increase in neutralising antibody which might be maintained for at least 2½ months. From America comes a paper by FRANCIS and MAGILL.[6] These workers have made use of virus grown in a chick-embryo Tyrode medium, under which conditions it maintains its power to infect ferrets and mice when given by the nasal route and immunises without infecting when inoculated intraperitoneally or subcutaneously. They have administered this living culture-virus subcutaneously or intradermally to a group of 23 volunteers. This procedure was not attended by any unpleasant reactions and no evidence was obtained that living influenza virus introduced by these routes appeared in the nasopharynx. Further the persons so treated developed a titre of neutralising antibody which paralleled that resulting from natural infection, both as regards degree and duration.

Considerable progress has thus been made towards finding a safe and adequate method of immunising man against the virus of influenza. It will be necessary, however, to try these methods in the field before any definite conclusion can be reached about their efficacy.

BORSTAL TRAINING

THE last general inquiry into English prisons was conducted by a departmental committee appointed in 1894 by Mr. ASQUITH who was then Home Secretary. One of the matters referred to this committee was the subject of prison labour and occupation, and its deliberations found expression in the Prevention of Crime Act, 1908, whereby the Borstal system was inaugurated for young offenders from 16 to 21, the upper age-limit having since been extended to 23 years. It was the segregation of these young persons that transformed the conception of prison labour to one of vocational training. This training has now become the indispensable characteristic of Borstal

[1] Smith, W., Andrewes, C. H., and Laidlaw, P. P. (1935) *Brit. J. exp. Path.* **16**, 291.
[2] Burnet, F. M. (1937) *Ibid*, **18**, 37.
[3] — (1936) *Ibid*, **17**, 282.
[4] Shope, R. E. (1936) *J. exp. Med.* **64**, 47.
[5] Andrewes, C. H., and Smith, W. (1937) *Brit. J. exp. Path.* **18**, 43.
[6] Francis, T., jr., and Magill, T. P. (1937) *J. exp. Med.* **65**, 251.

detention, and serves, also, as a useful index to the happiness and progress of the boys, for, as Mr. RODGER remarks in the report[1] before us, "a boy who is vocationally efficient tends not only to be vocationally contented, but also to be generally contented; and, conversely, a boy who is vocationally inefficient tends not only to be vocationally discontented, but also to be generally discontented." It was hardly to be expected that vocational inefficiency with its accompanying discontent would disappear at once from Borstal institutions. Such inefficiency seems to have been caused less by the imperfect working conditions, which existed in some of them—out-of-date equipment, undue pressure on production, and so on—than by the unsuitability of the workers themselves. A really able boy frittered away his time doing work which provided him with little scope for his abilities, while good money was wasted in requiring another to attempt work for which he was not fitted. Thus the procedure adopted in assigning boys to their various work-parties came under suspicion. Nominally, this duty was performed by the house-masters; in practice however the boys often made their own choice selecting occupations in which they were interested. But inasmuch as interest is not the only determinant of occupational efficiency, failures were inevitable.

At this point the National Institute of Industrial Psychology was asked to survey the situation, and a preliminary experiment was made at Feltham in 1926 "to discover to what extent, if any, the use of psychological tests, by simplifying the problem of allocating the most suitable to the various working parties, would make for contentment and stability in work among the boys and reduce the frequency of requests for a change of task." The prison commissioners reported that none of the lads who were selected for work parties, on the results of the tests, applied for transfer to another party. Accordingly a more extensive experiment was arranged, the results of which are here set out.[1] Four hundred boys, taken at random at Wormwood Scrubs from boys awaiting removal to Borstal, were examined before they began their training and vocational recommendations made. These recommendations were forwarded to the institutions only in alternate cases; in the remainder they were recorded but not disclosed, the boys being allocated to their work-parties by their house-masters as before. Thus the relative merits of the old and new methods could be assessed with a fair degree of accuracy, half of the 400 boys forming a control group. For various reasons, 82 of the boys examined dropped out of the experiment, but fortunately there remained an almost equal number in each group—158 boys in the "recommended" and 160 in the "control" group. Of the former, 110 became Grade A workers, of the latter only 73; in other words, 69·5 per cent. of the investigator's recommendations and only 45·6 per cent. of the house-masters' recommendations led to satisfactory results. Mr. Rodger points out that the difference is statistically significant; it is almost certainly not a chance difference. The success of the new procedure was shown more clearly by some of the work-parties than by others, but in every party it was definite.

Extracts from some of the tests used are included in an appendix to the report; they were applied to ascertain intelligence, the judgment of shapes and sizes and ability to reproduce them, mechanical ability and manual dexterity. Mr. Rodger lays stress on the study of temperament. Whatever may be the value of carefully interpreted results of carefully constructed and carefully administered tests for general and specific abilities, these do not in themselves form an adequate basis for vocational guidance. Ten temperamental characteristics were selected for study—sociability, affection, cheerfulness, assertiveness, anger, energy, carefulness, perseverance, ambition, and stability. Such studies of temperament can only be effectively made by a resident trained official with ample opportunity for modifying his recommendations in accordance with the needs of the moment. Since Mr. Rodger's report was written the prison commissioners have arranged with the National Institute for instruction in the use of vocational tests to be given to Borstal house-masters, and several of them have now received such training. The result of this investigation should encourage those who believe that the study of temperament is a primary need in the treatment of young offenders. It may have even wider value in the prevention of delinquency.

[1] A Borstal Experiment in Vocational Guidance. By Alec Rodger, M.A. (of the staff of the National Institute of Industrial Psychology). Industrial Health Research Board. Rep. No. 78. H.M. Stationery Office. 1937. Pp. 41. 9d.

MEDICINE STAMP DUTIES

THE recommendations, which we print on a later page, of the Select Committee on Medicine Stamp Duties are along the lines foreshadowed in a leading article a few weeks ago[1] and the lines have been extended. The legislation which was the subject of the inquiries goes back to the year 1783 when the Chancellor of the Exchequer of that time, regarding "quack medicines" as "very proper objects of taxation," included them in his budget. At intervals during the succeeding twenty-nine years the original measure was overhauled, but since 1812 the only alterations which have been made in the law have been due to decisions of the courts and not of the House of Commons. Case law has been superimposed upon statutes which may have been within the context of the time when they were enacted, with the result that the provisions of the Stamp Duty Acts to-day are, in the words of a learned judge, a mass of confused obsolete verbiage. The task of the Committee was a difficult one. The case for complete abolition of the duties was presented with great zeal and thoroughness, but the Committee emerged from its ordeal with the conviction that the duties should apply to a wider field and bring in a much larger revenue. It is true that the

[1] *Lancet*, 1936, 2, 1527.

Committee has conceded one point, as is seen by the recommendation that the duty should be at the rate of twopence instead of threepence in the shilling and should be graduated less steeply. That, however, is cold comfort for a trade which may be called upon to contribute millions of pounds sterling to the Exchequer, whereas in the last financial year it contributed less than £800,000. It is estimated by the Committee that the duties now proposed would yield £3,300,000 in a full year; this we still think is a conservative estimate.

It should not be overlooked that the "recommendations" are recommendations and nothing more. It is unlikely that the Committee really intends to tax medicines dispensed on doctors' prescriptions yet, as we read the report, that would be one of the effects of the proposals. If the active principle is extracted from the list of proposed dutiable articles it will be seen that it is this: "substances of any sort held out directly or indirectly for the treatment of any part of the human body or for the protection or maintenance of bodily health should be liable to duty." There can be little doubt that the courts would hold that medicines prescribed or dispensed by medical practitioners were at least "indirectly held out" as being for the treatment of some part of the human body or for the protection of health. Any clause in any Bill presented to Parliament which interprets this recommendation as applying to medicines dispensed on the prescription of registered medical practitioners will need careful scrutiny, for the Committee can hardly have intended to bring such medicines into the same category as lipstick and hair-oil. Had the Committee included in the list of exemptions the additional item "all medicines, &c., recommended, sold or prescribed by registered members of the medical profession" there would have been no doubt about its intentions.

The recommendations are of a sweeping character. They stop up the holes through which lawful evasion has been possible and sweep in everything which looks like a drug or smells like one. They seek to deprive pharmacists of a privilege which Sir JOHN CAVENDISH, the Chancellor of the Exchequer who first imposed the duties more than a hundred and fifty years ago, intended their ancestors to enjoy. Pharmacists will be on all fours with the sixpenny bazaars should Parliament follow the advice of a Committee which sees no reason why "the modern chemist" should have "a very valuable preference" in the sale of preparations which claim the "known, admitted and approved remedy" exemption which has hitherto enabled them to sell unstamped certain types of preparations liable to duty if sold by ordinary shopkeepers. The Committee appears to think that pharmacists are well enough endowed with advantages and cites the Dangerous Drugs Act as one of them, but while leaving the Pharmaceutical Society free to present its views on the matter of the proposed deprivation of a privilege which has been theirs for a hundred and fifty years, it may be doubted whether the pharmacists' obligations under the Dangerous Drugs Act could not be more justly described as a responsibility than an advantage. A note of bitterness against pharmacists seems to have found its way inadvertently into a rapidly prepared and, on the whole, excellent report. It is suggested that "the presence of a registered pharmacist on premises where there are large sales of ready packed medicines" is an illusory safeguard for the purchaser; the business of pharmacy is however under strict statutory control and constant inspection.

Despite defects, almost inevitable in a report which has to be ready by a certain date, the recommendations are in the interest of the public and that is the thing that matters. The proposal to tax medicines dispensed on prescriptions of medical practitioners will hardly go any further, and it is at least arguable whether soap should be taxed. Although it was not within its terms of reference to consider the ethics of the secret medicine traffic, the Committee says that the appeal to fear "which is the underlying motive of large numbers of advertisements" is psychologically harmful.

PROTAMINE ZINC INSULIN

IN our correspondence columns this week the four firms that manufacture insulin in this country announce that they are issuing a protamine zinc preparation. It is just over a year since we first drew attention to the success attained by Prof. H. C. HAGEDORN of Copenhagen in his attempt to devise an insulin compound that would be slowly absorbed and thus have a prolonged and constant action. The compound he devised was made by mixing insulin hydrochloride with a protamine derived from the sperm of the rainbow trout, and its merit was that its insolubility was greatest at *p*H 7·3—i.e., at about the reaction of normal plasma. Our readers will recall that last August IZOD BENNETT and MORTON GILL confirmed the great value of this slow-acting insulin for diabetic children. And on Jan. 16th we reported a sectional meeting of the Royal Society of Medicine at which HAGEDORN himself spoke and others testified that compared with ordinary insulin the protamine preparation is capable of keeping patients in better health on a smaller total daily dose.

The addition of small quantities of zinc to protamine insulin delays its absorption yet further. Prof. HAGEDORN said that he prefers, for his own part, to use a zinc preparation only when the ordinary protamine insulin is unsatisfactory; but the amount of zinc added is so small as to be generally considered harmless, and evidently the British manufacturers are persuaded that the advantages of the addition outweigh the disadvantages. In their latest communication[1] RABINOWITCH and his colleagues at Montreal are able to demonstrate that the zinc product is more stable than the ordinary protamine insulin, and shows no change after as long as six months. They point out however that it is a delicate substance and say that they have to warn their patients against shaking it unduly and against

[1] Rabinowitch, I. M., Fowler, A. F., and Corcoran, A. C.: *Canad. med. Ass. J.* February, 1937, p. 111.

allowing it to be contaminated with the alcohol commonly used for sterilising syringes. (Possibly the same caution applies to ordinary protamine insulin, and if so the irregularities often noticed in its effect may perhaps be attributable to contamination with alcohol, or to a change in hydrogen-ion concentration.) In clinical use the Canadian workers were very pleased with protamine zinc insulin, for a single daily dose sufficed in almost every case, the risk of reactions was much less than with ordinary insulin, and although protamine zinc insulin rapidly reduced the blood-sugar level in hyperglycæmia, there was safety in its use because the fall was no greater with 100 units than with 50. It has been found advisable to bring the patients into hospital to "stabilise" them, and it is worth noting that stability is almost always achieved more quickly with "ladder" diets than by giving the full theoretical basal diet at once. It is unnecessary, they find, to make very frequent blood-sugar determinations, and they rightly remark that the simpler the treatment the more likely the patient is to coöperate in it. In 132 cases in which zinc protamine insulin was used there were 8 failures—i.e., cases in which glycosuria could not be controlled, or the blood-sugar could not be normalised in the fasting state, on a single dose daily. Of these 8 cases, 3 could not be properly controlled even with frequent injections of ordinary insulin, while 3 others responded satisfactorily to two daily injections of the protamine zinc.

In the paper already mentioned IZOD BENNETT and MORTON GILL called attention to the difficulties and dangers attendant on the standardisation of these new products. An international unit of insulin is a measure of the activity of a substance of which a standard sample is kept at the National Institute of Medical Research; but the activity of protamine insulin and of protamine zinc insulin differ somewhat from this and from each other, and it is hard to make comparisons. Apart from this, the slowness, and occasional irregularity, with which the new products are absorbed often means that it takes a longish time to find the right dosage for a particular patient. While it is true that the intensity of hypoglycæmic reactions is usually much diminished when the slower insulins are employed, it is also true that such effects may last longer. Again it is to be remembered that owing to their slowness the new products are less rapidly effective in cases of diabetic coma, and most authorities agree that the old insulin should always be preferred for this most dangerous complication. At a time when many a patient will be asking his doctor to apply the newest discovery it should be remembered that its use carries certain difficulties and that there are some cases in which the original form of insulin is both easier to use and more effective. Prof. HAGEDORN in his address quoted and amplified a saying of JOSLIN to the effect that the patient with diabetes is sailing on an uncharted sea and that on this dangerous voyage he is alone save for the company of his physician.

ANNOTATIONS

EXPLOSIONS IN OPERATING THEATRES

MOST of the investigations which have been recently undertaken to ascertain the causes of explosion associated with the use of anæsthetics have been directed to discovering the origin of the heat or spark which starts the explosion. The position in this respect has been made clear, and was expounded recently by Mr. E. H. Rayner, Sc.D., of the National Physical Laboratory, who did much of the necessary work.[1] He showed among other things that static electricity was unlikely to be a danger as long as the atmosphere of the theatre had a relative humidity of at least 65 per cent., which is usually the case in this country. An investigation undertaken by Mr. J. H. Coste for the London County Council dealt with the chemical side of the explosion problem. It will be remembered that the late Prof. H. B. Dixon carried out a number of experiments for the Anæsthetics Committee on the ignition points of gases.[2] He showed for example at how low a temperature mixtures of ether and oxygen might explode, and he drew special attention to the unrecognised explosibility of mixtures in which air was replaced by nitrous oxide in conjunction with ether or other inflammable gases. The work of Mr. Coste and his colleague, Dr. C. A. Chaplin, confirms in several directions the previous conclusions of Dixon and his co-workers, and defines the limits of explosibility of ethyl chloride vapour and air at roughly between 5 and 15 per cent. Their examination of the atmosphere of theatres during open employment of ether, which included determinations of the percentages of ether vapour within a few inches of the patient's mouth and at various heights from the floor, corroborates the usual opinion that the danger of explosion or burning is very slight owing to the rapid descent of ether vapour through air. Experiments in a large cylindrical vessel in which ether was spilt on to an absorbent surface at the bottom showed that the diffusion upwards of ether vapour is very slow compared with the horizontal spread, a conclusion which was confirmed by upsetting a bottle of ether on the floor of an operating theatre and examining the air above the spreading liquid. Naturally there will be trouble if the heat—cautery, open flame, &c.—is applied close to the source of the ether vapour, but in ordinary circumstances, if the possible source of ignition is a foot or more above floor level, safety is assured. Clinical experience upholds this finding. It may be taken that, except in the immediate neighbourhood of the mask, the air in a theatre where ether is being freely used by an open method is not inflammable or explosive—however objectionable it may be otherwise.

[1] *Lancet*, 1936, **2**, 1408.
[2] *Ibid*, 1927, **2**, 247.

EFFECT OF POSTURE ON THE ELECTROCARDIOGRAM

CERTAIN persons of asthenic build show circulatory changes of unusual kind when they rise from the lying to the sitting or standing posture. "Postural hypotension" is a condition on which much has now been written; but besides the blood pressure the pulse-rate may also be affected, and at the same time, as described by Akesson,[1] important changes may appear in the electrocardiogram. He investi-

[1] Akesson, S. (1936) *Uppsala LäkForen Förh.* **42**, 263.

gated ten patients with "arterial orthostatic anæmia" and found that as they passed from the lying to the sitting and then to the standing position there was, with one or two exceptions, an increase in the pulse of 30 or more beats per minute, and in the electrocardiogram a depression of the RS–T segment in leads II and III, with a decrease in amplitude or actual inversion of the T wave in these leads. In the lying position the curves were normal in all cases. These temporary changes in the tracing are similar to what may be observed as persistent abnormalities in organic myocardial lesions, and it is held that in the cases studied an imperfect circulatory adjustment to posture leads to a diminished venous return to the heart, and a myocardial anoxæmia. The oxygen-lack causes functional disturbance of the heart muscle, and this is expressed in the electrocardiogram. Similar temporary changes in the tracing may be observed during an attack of effort angina, though here it is usual to find an abnormal curve apart from an attack. Since electrocardiographic changes which are dependent entirely on posture may be misinterpreted, and accepted as evidence of an organic myocardial lesion, Akesson recommends that tracings should be taken with the patient lying down.

CAN IMPACTION OF THE THIRD MOLAR BE PREDICTED?

THE third molar and the complications which may arise from its impaction and consequent inability to erupt properly has been subjected to close study during the last few years by Mr. Bowdler Henry.[1] Not only has he ransacked the available literature, but he has taken a large number of radiograms of students and others, and has examined them with great care. It is not generally realised how serious may be the consequences of impaction of this tooth; out of 622 cases collected by Mr. Henry 42 ended fatally. But quite apart from the possible danger to life, the condition of impaction gives rise to much pain, often, if indirectly, to suppuration, while its removal is difficult, and the after-effects are usually unpleasant. It is generally agreed that an impacted wisdom tooth is better removed while the surrounding tissues are healthy, and that the post-operative sequelæ are less in young subjects. Mr. Henry, in conjunction with Dr. C. M. Morant, has now carried out a statistical study of the four series of radiograms of medical and dental students previously collected[2] with a view to ascertaining whether there is any way of predicting ultimate impaction of the lower third molar. The method used was to trace the outlines of the three molars and their pulp cavities and certain margins of the mandibles directly from the films. These were enlarged by photography, and from them a series of measurements were obtained and treated by statistical means. The films used were all taken by the same extra-oral method, and the main series consisted of 187 films relating to 127 persons ranging from 17 to 42 years. Of the measurements taken some were discarded as being too liable to error; finally one index which the authors term the Third Molar Space Index was obtained which promised to give information as to the possibility of impaction. This index expresses the maximum breadth of the outline of the third molar as a percentage of the space between the second molar and the border of the ramus. It decreases with age and makes a clear distinction between cases of normal eruption and impaction for individuals aged 22 and over. It was found that the values of this index ranged from 43 to 90 in individuals with normal eruption of the third molar. In cases of coronoid impaction the range was from 90 to 142, while in mesio-oblique impaction the index varied from 81 to 160. Thus the higher the index the greater is the degree of impaction, and hence the more reason for intervention. For example, if the index for an individual of 22 years is 120 or greater it should be taken as an indication for removal of the third molars. The index would possess considerable value if its measurement in immature persons could be used to predict impaction at a later age. At present the material available is insufficient for this purpose, though the authors hold out hopes that if a larger amount of data were collected prophecy of this order might become possible; a series of radiograms of 100 persons of each sex taken at yearly intervals from 16 to 22 years would be required. Investigations of this kind are, of course, laborious and expensive, and the wastage from persons dropping out of the groups may lead to an annoying and progressive loss of data. But this preliminary investigation opens up such interesting possibilities that we hope it may be found possible to extend it in the direction suggested.

[1] See *Lancet*, 1934, **1**, 416, and 1935, **1**, 313.
[2] *Biometrika*, 1936, **28**, 378.

CONSERVATIVE TREATMENT OF ACUTE INFECTIONS

Sir David Wilkie's contribution to a series of Clinical Recollections and Reflections appearing in the *Edinburgh Medical Journal* is devoted to the treatment of acute infections.[1] There has lately been a fundamental change in outlook on this subject, and he attributes it to the surgeon being trained to think more on biological and less on mechanical lines. It must now be recognised, he says, that in cases of infective punctured wounds of the hand with lymphangitis incision within 48 hours is a grave mistake. Bier's passive congestive treatment, which consists in applying a special thin elastic bandage for 22 out of the 24 hours just firmly enough to produce a slight œdema but not duskiness, relieves the pain and helps the condition to localise. Failure to apply this treatment is tantamount to criminal neglect. Hot fomentations and streptococcal antitoxic serum, possibly supplemented by Prontosil, are used while the knife lies idly by. For a simple boil the treatment recommended is complete immobilisation by strapping until the core is ready to separate. Incision is wrong in theory, because a boil is not an abscess, and it is mischievous in practice. What is good for a boil is equally good for a carbuncle; in severe toxic cases staphylococcal antitoxic serum is advised. Turning to acute pleural effusions, Sir David points out that repeated aspiration is often necessary before localisation takes place. For acute peritonitis, return to "the old physician's ways" of heat and morphia, with passive immunity by sera and fluid replacement if there has been vomiting, gives the patient a better chance than immediate operation with multiple drainage and attempts at stimulating prematurely the adynamic gut with pituitary extract and the like. Perhaps, of the several instances chosen in this paper, none is more remarkable than the change of outlook in the management of acute osteomyelitis. Dr. Broadbent may be right when he says on p. 564 of our present issue that this condition is a surgical emergency; but if so, the operation may certainly be a much more conservative one than has been generally

[1] Wilkie, D. P. D.: *Edinb. med. J.* 1937, **44**, 1.

held. As Sir David Wilkie says, to-day more and more osteomyelitis is treated by moderately free opening of the bone, packing with sterile vaselined gauze, and the enclosure of the whole limb in a plaster case for 3–6 weeks. Under this treatment it is usual for pain and pyrexia to subside, and when the wound is dressed at the end of, say, a month, healthy granulation tissue covers its surface.

SUBACUTE COMBINED DEGENERATION OF THE SPINAL CORD

IT is generally accepted that liver preparations are efficacious in the treatment of the nervous lesions associated with Addisonian pernicious anæmia provided the total red cell count can be kept above 5,000,000 per c.mm. Hyland and Farquharson,[1] who analyse 74 consecutive cases, conclude that intravenous liver therapy is the method of choice and that a dose at least twice as great as that required to improve the blood picture should be given. The best results were obtained when the patient was kept at rest in bed during the early months of treatment. In all cases relief from symptoms was striking and often the authors noted definite improvement in objective neurological signs: the most gratifying change was in the legs, depending on improvement in power, postural sense, and muscle tone, but there was also considerable recovery of sphincter control and of sensation. The most persistent abnormal signs were the altered reflexes, but motor and sensory function commonly improved greatly in the absence of recovery in reflexes. An analysis of the sensory changes showed a tendency to a segmental distribution which, Hyland and Farquharson suggest, indicates an origin in the spinal cord rather than in peripheral neuritis. They believe that their evidence proves that much clinical improvement can occur even when the tracts of the cord are severely damaged. This improvement they attribute primarily to the subsidence of swelling associated with an active degenerative process, thus allowing undegenerated fibres to resume function and mildly damaged fibres to recover. They do not think that peripheral neuritis plays any great part in the neurological manifestations of pernicious anæmia —a point of view at variance with that of many other workers. Improvement in sphincter control and reflexes shows, in their opinion, that changes for the better may take place within the cord; while the segmental distribution of sensory lesions they regard also as evidence of central rather than peripheral origin.

BACTERIA CHASED INTO BLOOD CULTURES

AN interesting aid to the bacteriological diagnosis of typhoid fever is described in the *Presse Médicale* of Feb. 3rd by Irdelp, Guchan, and Ugan of Istanbul. They investigated the effect of administration of adrenaline on the blood culture in typhoid fever, and they found that injections given just before the taking of blood may considerably enhance the chance of obtaining a growth of organisms. The idea is that adrenaline causes the spleen to contract, and thus, to use the authors' expression, "chasser le microorganisme dans le courant sanguin." The actual procedure is to give an injection of 1 mg. of adrenaline hydrochloride and to take the blood for culture 15–20 minutes later. This interval was chosen on the basis of X ray examinations of the splenic contractions after the administration of adrenaline. The method was tested on 103 blood cultures taken from 49 cases of typhoid fever, and the following Table gives the results of blood cultures taken before and after the administration of adrenaline.

Day of illness.	Blood culture.				Percentage positives.	
	Before injec.		After injec.		Before injec.	After injec.
	+	−	+	−		
7–14	23	11	26	8	67·6	73·6
15–21	14	28	25	17	33·3	59·5
22–28	0	27	0	27	0	0

It will be seen that it is especially in the third week of the disease, when positive cultures are usually difficult to obtain, that the adrenaline treatment seems advantageous. It is stated that the typhoid patients suffered no kind of harm from the use of adrenaline for this purpose.

PNEUMATIC TRANSFERENCE OF RADIUM

THE use of large radium units has, in the past, been limited by the difficulty of providing adequate protection for staff and patients, and the method of pneumatic transference which allows the radium to be lodged in a safe during all manipulations is an important advance. The apparatus is described in a recent article[1] by Mr. L. G. Grimmett, physicist to the Radium Beam Therapy Research at the Radium Institute, London. Pneumatic transference was suggested for the Westminster Hospital unit in 1934, but not then fully worked out. For the last two years however Dr. Sievert[2] has had a five-gramme unit working on this principle at Radiumhemmet, Stockholm. The unit at the Radium Institute is mounted on ball bearings in a trunnion and counterbalanced. Gear wheels are provided for raising and lowering the apparatus, for rotating the trunnion about the vertical shaft, and for rotating the unit about its axis in the trunnion. The radium is in special monel metal tubes, each containing 200 mg. of radium element in the form of sulphate, and these are packed inside a steel bobbin. This bobbin is blown by air pressure from the safe through a flexible pipe which enters the unit along its axis of rotation in the trunnion. It then passes through an internal pipe in the nozzle where it closes an electric contact and this registers its position by lighting a lamp in the operator's room. There are three such lamps which show whether the radium is in safe, pipe, or unit. The construction of the bobbin is very important. It must be light and yet provide a sufficient surface against which the air pressure acts. An arrangement of springs in the shape of hardened steel wedges brings the bobbin firmly into position and an ingenious arrangement compresses the air in front of it as it approaches its final position in the unit so that it acts as a resilient cushion. The protection aimed at is 10 cm. of lead, and this has been achieved except for the region immediately under the radium. To increase the protection here as far as possible an eccentric lead screen is fitted which can be rotated so that the thickest portion lies between the patient and the radium. For protection use has been made of the tungsten alloy described by

[1] Hyland, H. H., and Farquharson, R. F. (1936) *Arch. Neurol. Psychiat., Chicago*, **36**, 1166.

[1] *Brit. J. Radiol.* February, 1937.
[2] *Acta radiol., Stockh.* 1937, **18**, 1.

McLennan and Smithells. This alloy has a density of from 16 to 16·5 g. per c.cm. and is roughly one and a half times as effective as lead. Different nozzles can be fitted to allow of treatment at varying distances and areas, and a hand-loading system is available in case of breakdown. The air pressure is supplied by an ordinary vacuum cleaner. Together with the lamp on the indicator board there is an electric clock which times the dosage; it is started by the contact of the bobbin and runs only when the radium is in position. Accurate localisation of the beam is facilitated by a directional calliper devised by Mr. T. A. Green, F.R.C.S. The performance of the unit has proved satisfactory and other large units are likely to be installed on this principle in the near future.

NON-RHEUMATIC CHOREA

IT is generally assumed in the English-speaking countries that chorea is almost always evidence of rheumatic activity. This opinion is less rigidly held in many continental centres and of late years it has been suggested that chorea is sometimes wholly unrelated to juvenile rheumatism. Coburn and Moore now report [1] that in a group of 114 patients attending monthly at a rheumatic clinic for periods of 2–10 years, there were 34 (approximately 30 per cent.) who developed no signs of rheumatism apart from repeated chorea. In another group of 137 consecutive admissions to a New York hospital for chorea 69 had no history or stigmata of rheumatic disease and though the other 68 had shown rheumatic manifestations, in 29 of them attacks occurred when the rheumatism appeared quiescent. The choreic child may have no family history of rheumatism and may never show any signs of the disease; he may have chorea repeatedly without any preliminary infection of the respiratory tract, and without any change in blood sedimentation-rate or leucocyte count. Other observers have pointed out that the sedimentation-rate in uncomplicated chorea is usually normal and this, according to Coburn and Moore, is strong evidence against the rheumatic origin of chorea. They conclude that the physiological background necessary for the development of chorea may be prepared by a number of abnormal conditions but is especially well prepared by the rheumatism—which accounts for the frequency of chorea in rheumatic subjects. On the other hand the factor that initiates the attack of chorea may be entirely independent of rheumatic activity and is probably often psychic. It is relevant to note that Dr. Lindesay Neustatter,[2] working at Guy's Hospital, has come to the conclusion that "there is probably a common diathesis for nervousness and rheumatism." And he thinks that chorea occurs in children who are constitutionally nervous.

STUDIES ON CHRONIC ARTHRITIS

WHILE we have now fairly full knowledge of the anatomical changes in the joints themselves in chronic arthritis we have hardly an inkling as to either their immediate or their remote causation. Even our descriptive knowledge of the subject is in a backward state, and there is still a wide field of study open to the clinician who has the patience and tenacity to undertake the study of this disabling chronic disease. There is much in the saying that to know the natural history of disease is to know more than half medicine. It is, in particular, precise knowledge of the premonitory and incipient signs of chronic arthritis that is needed. Until these can be separated from the trivial "rheumatic" troubles of common life it is difficult to devise any scheme of prevention or early treatment. It is at the early stage, too, that a search for the possible infecting agent should hold most promise. A valuable study of spondylitis by Dr. Gilbert Scott [1] illustrates the kind of reconnaisance which must take place in the "campaign against rheumatism" before the sober work of advance and consolidation can proceed. He recognises two main types, spondylitis osteo-arthritica and spondylitis adolescens, the latter being always associated with X ray changes in the sacro-iliac joints, while in the former the sacro-iliac joints are normal. The changes in the sacro-iliac joints in spondylitis adolescens may precede the more obvious signs of spondylitis by many years, and may be unaccompanied by local pain in the sacro-iliac joints. A prespondylitic syndrome can, however, often be recognised consisting in recurrent attacks of rheumatic pain in the limbs, thorax, abdomen, and so forth. In such cases an X ray examination of the sacro-iliac joints may be of great value in diagnosing the condition at an early stage, the more so, as according to Dr. Scott good therapeutic results may be obtained with X rays if treatment is initiated during the incipient stages.

Other articles in this volume are by Dr. H. Warren Crowe on the "pathogen selective" culture method and its bearing on chronic rheumatic disease, and by Dr. Harry Coke on the differential sedimentation test. Dr. Crowe by no means accepts the Solis-Cohen "pathogen selective" test as a final method of tracing an infection to its "focus," but he has faith in the value of the test in the study of chronic arthritis. The organisms appearing in positive tests were mostly enterococci (including *Str. zymogenes*), hæmolytic streptococci, and staphylococci of a certain type (called by Dr. Crowe *Staph. flavus*). In a large number of cases of chronic arthritis investigated the highest percentage of pathogen-selective positive sera were met with in the groups commonly regarded as infective in origin—e.g., rheumatoid arthritis—but in no group was the percentage so low as to suggest the existence of an entirely non-infective group. The rather complicated test described by Dr. Coke is based on the interaction of the positively charged serum proteins in acid medium with negatively charged ortho-vanadic acid. The final readings are made with a refractometer. According to its author it gives more valuable clinical indications than the usual blood-cell sedimentation test, and has the added advantage that the patient need not personally attend the laboratory.

FREEDOM FOR RESEARCH

THE obliquity of antivivisection propaganda is once more illustrated by two Bills before the House of Commons. These are the Vivisection of Dogs (Scotland) Bill and the Cinematograph Films (Animals) Bill, a private members' Bill sponsored by Sir Robert Gower. The danger attending such attempts to hamper medical investigation is that whereas officials of the antivivisection societies spend lavishly their own time and their subscribers' money in support of them, research workers and organisations can only devote spare moments, surplus energy, and slender resources to countering what they regard as spiteful and nonsensical propa-

[1] Coburn, A. F., and Moore, L. V., *Amer. J. med. Sci.* January, 1937, p. 1.
[2] *Guy's Hosp. Rep.* January, 1937, p. 8.

[1] Charterhouse Rheumatic Clinic Original Papers. London: Humphrey Milford, Oxford University Press. 1937. Pp. 203. 15*s*.

ganda; and unless vigilance is displayed a damaging Bill may one day slip through Parliament. Unfortunately a few of those who allow their names to be used as supporters of the antivivisection movements are medical men. The fact that, often long ago, they passed certain examinations does not as a matter of course given them the right to be heard when they deny the importance of the results obtained by other members of the profession from animal experiments, but it weighs to some extent with a section of the public already prejudiced against such experiments. The utterances of distinguished investigators whose attention has been especially focused on the importance of experiment on the human subject have, moreover, been twisted and used to obscure the issue, especially as regards the use of dogs for experiments. The whole question has been investigated by impartial inquirers over and over again and always with the same result as was reached by the Royal Commission of 1912—namely, that "experiments upon animals, adequately safeguarded by law, faithfully administered, are morally justifiable and should not be prohibited by legislation," and the question of whether the dog should be used in a particular case is one for experts. As regards experiments on the cardiovascular system, for example, Sir Thomas Lewis has pointed out that the circulation of dogs more closely resembles the circulation of man than does that of any other domesticated animal, and that information derived from experiment upon unconscious dogs is being constantly used in the practitioner's daily work. The meaning of such common symptoms as palpitation, breathlessness, giddiness, fainting, and innumerable other forms of distress have been elucidated in this way and the technique of any number of therapeutic measures in routine use—e.g., blood transfusion, or rectal feeding—is based on knowledge won by animal experimentation.

Even more insidious than the Bill designed to prevent the vivisection of dogs in Scotland is the Cinematograph Films (Animals) Bill, which proposes to prohibit the production or exhibition of (*a*) any film, the producing or making of which involves suffering to animals; or (*b*) any film depicting or purporting to depict combats with or between animals, or the suffering, terror, or rage of animals, and provides that "in any proceedings brought under this Act the court may, until the contrary is proved, infer from the incidents depicted or purporting to be depicted by the film that suffering to animals was involved in the producing or making thereof." Certain objects of the Bill may be excellent but the deliberate omission of any exemption under the Act 39 & 40, Vict. cap. 77 would mean that the present practice of preparing films showing experiments on animals for teaching purposes or for showing the results of research would have to be discontinued. The consequence of such a provision would be an increase of experiments under Certificate C.

In antivivisection propaganda misleading statements are constantly being made. The central fact that operational experiments are only performed under deep anæsthesia and with the strictest precautions to avoid suffering is not allowed to emerge; the advantages which have accrued from experiments on dogs are concealed and groundless distress is given to many right-minded men and women by suggestions of cruelty, sometimes pictorial, where none actually exists. Doctors could help, probably more than any other body, in creating an informed and intelligent public opinion. If they do not know enough of the facts, these can be obtained from the literature issued by the Research Defence Society (11, Chandos-street, W.) or from a well-balanced memorandum upon the Dogs Protection Bill by the Medical Research Council (1927, H.M. Stationery Office, 2*d*.). The closing paragraph of this memorandum supplies a cogent answer to some of the charges which are brought, and raises a useful issue for future legislation. Many members of Parliament, and particularly the medical members of both Houses, have in the past helped to protect scientific workers from the consequences of unjust or pernicious legislation, and we have confidence that now and in the future their good offices will be exercised again and again as need arises.

ON March 9th and 11th Dr. Crighton Bramwell will deliver the Lumleian lectures to the Royal College of Physicians of London. He will speak on the arterial pulse in health and disease. The lectures will be held at 5 P.M. and members of the medical profession will be admitted on presentation of their card.

THE Royal Society of Medicine will hold a reception on the evening of May 10th to celebrate Coronation Week. Medical visitors to London from the Empire overseas will be welcome to attend this reception; but as accommodation is limited those who wish to take advantage of the invitation are asked to communicate with the secretary of the society at 1, Wimpole-street, London, W.1, not later than May 1st.

THE fourth Biennial Informal Conference of the British Empire Cancer Campaign will be held on Tuesday and Wednesday, March 16th and 17th, at the Royal Society of Medicine, 1, Wimpole-street, London, W. Admission to the conference will be by card only and applications should be made to Mr. Lawrence Abel or Dr. R. W. Scarff, the joint secretaries of the Organising Committee of the Campaign (12, Grosvenor-crescent, London, S.W.1). There is also to be a dinner on Wednesday, March 17th, at the Langham Hotel. Intention to be present should be signified to the joint honorary secretaries, and the dinner will be an informal one in respect of dress.

AN INSTITUTE OF SANITARY SCIENCE.—A meeting was held in Dublin on Feb. 26th to form an Institute of Sanitary Science. Mr. Nicholas O'Dwyer, who presided, stated that among the objects of the institute would be training for minor public health work, and the holding of examinations and issuing of certificates for proficiency; the conferring of fellowships, memberships, and associate memberships; the maintenance of a museum library, laboratory, and lecture chamber; and coöperation with other bodies interested in the promotion of sanitary science. A committee was appointed consisting of members of the medical, engineering, and nursing professions.

FEDERATION OF THE HEALTH RESORTS OF FRANCE. An Easter tour under the management of the Federation is planned, the itinerary in the Riviera comprising Cannes, Grasse, Nice, Menton, and Monaco; the tour will take place from March 21st to 28th, and for medical men and their families the inclusive charge of Frs.1000 will be made plus a small booking fee. The tour is under the direct organisation of the Société Médicale de Climatologie et d'Hygiène du Littoral Méditerranéen, and a reduction of 40 per cent. is granted in respect of French railway fares.

During the same period a congress on pediatrics, under the presidency of Prof. Nobecourt, will be held. Applications for further information should be made to the Federation of the Health Resorts of France, Tavistock House, Tavistock-square, London, W.C.1.

PRINCIPLES OF MEDICAL STATISTICS

X—THE COEFFICIENT OF CORRELATION

A PROBLEM with which the statistician is frequently faced is the measurement of the *dégree* of relationship between two, or more, characteristics of a population. For instance in a particular area the air temperature is recorded at certain times and the mean air temperature of each week is computed; the number of deaths registered as due to bronchitis and pneumonia is put alongside it. Suppose the following results are reached :—

Mean temperature of week in °F.	Number of weeks with given mean temperature.	Mean number of deaths registered as due to bronchitis and pneumonia in those weeks.	Range in weekly deaths.
35–	5	253	186–284
38–	7	205	147–238
41–	10	130	94–180
44–47	4	87	69–112

There is clearly some relationship between these two measurements. As the mean weekly temperature rises there is a decrease in the average weekly number of deaths from bronchitis and pneumonia, which fall from an average of 253 in the 5 coldest weeks to an average of 87 in the 4 warmest weeks. On the other hand there is at the same mean temperature a considerable variability in the number of deaths registered in each week, as shown in the ranges given in the right-hand column. In individual weeks there were sometimes, for instance, more deaths registered when the temperature was 38°–41° than when it was 35°–38°. In measuring the closeness of the relationship between temperature and registered deaths this variability must be taken into account.

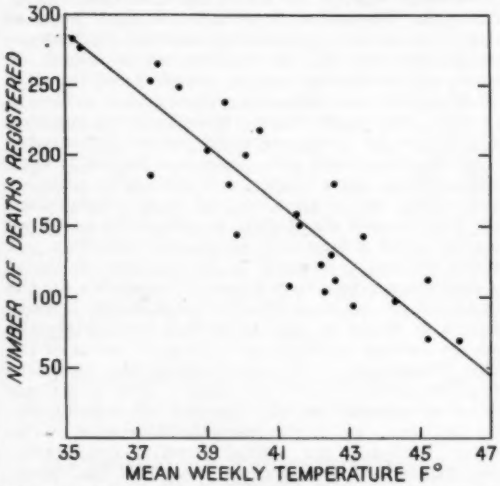

FIG. 6.—Number of deaths registered in each week with varying mean temperatures. A scatter diagram.

The declining number of deaths as the mean temperature rises, and also the variability of this number in weeks of about the same temperature, are shown clearly in Fig. 6—known as a *scatter diagram*. It appears from the distribution of the points (each of which represents the mean temperature of and the deaths registered in one week) that the relationship between the temperature and the deaths could be reasonably described by a straight line, such as the line drawn through them on the diagram. The points are widely scattered round the line in this instance but their downward trend follows the line and shows

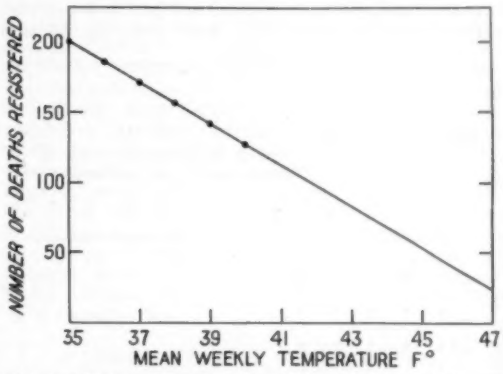

FIG. 7.—Number of deaths registered in each week with varying mean temperatures. Hypothetical case of complete correlation.

no tendency to be curved. The means in the table above very nearly fall on the line. In such instances a satisfactory measure of the degree of relationship between the two characteristics is the coefficient of correlation, the advantage of which is that it gives in a single figure an assessment of the degree of the relationship which is more vaguely shown in the table and diagram (both of which are, however, perfectly valid and valuable ways of showing associations).

Dependent and Independent Characteristics

There are various ways of considering this coefficient. The following is perhaps the simplest.

(i) Let us suppose first that deaths from pneumonia and bronchitis are dependent upon the temperature of the week and upon no other factor and also follow a straight line relationship—i.e., for each temperature there can be only one total for the deaths and this total falls by the same amount as the temperature increases each further degree. Then our scatter diagram reduces to a series of points lying exactly upon a straight line. For instance, in Fig. 7 the deaths total 200 at 35°, 185 at 36°, 170 at 37°. For each weekly temperature there is only a single value for the deaths, the number of which falls by 15 as the temperature rises one degree. If we know the temperature we can state precisely the number of deaths. No error can be made for there is no scatter round the line.

(ii) Now let us suppose that the deaths are completely independent of the temperature, but fluctuate from week to week for quite other reasons. When the temperature is low there is then no reason why we should observe a larger number of deaths than when the temperature is high, or vice versa. If we had a very large number of weekly records we should observe at each temperature all kinds of totals of deaths. The scatter diagram would take the form shown in Fig. 8 (only roughly, of course, in practice). At 35° there were, for example, weeks in which were recorded 50, 75, 100, 125, 150, 175, and 200 deaths; at 36° we see the same totals, and similarly at each

higher temperature. The average of the weekly totals of deaths observed is the same at each temperature and is equal to the average of all the weekly observations put together, for the two characteristics being independent there is no tendency for these averages to move up or down as the temperature changes. If we know the temperature of the week we obviously cannot state the number of deaths in that week with any accuracy. We can, however, attempt to do so and we can measure the amount of our error. The best estimate of the

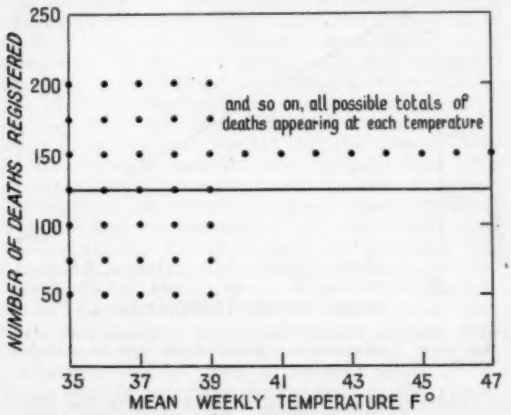

FIG. 8.—Number of deaths registered in each week with varying mean temperatures. Hypothetical case of complete absence of correlation.

deaths we can make at any weekly temperature is the average number of deaths taking place in all the weeks put together—for as pointed out we have no reason to suppose that the deaths recorded in a specified week will be more or less numerous than the average, merely because the temperature was high or low. Our error in a specified week is, therefore, the difference between the mean number of deaths in all weeks and the number of deaths that actually occurred in that particular week; e.g., the mean number of deaths in all the weeks recorded in Fig. 8 was 125; in one week with a mean temperature of 36° the number recorded was 50, and our error of estimation for this week is $125 - 50 = 75$. We can compute this error for each week in turn and find the average size of our error, or, preferably, we can find the average of the squared errors. This latter value will, in fact, be the square of the standard deviation of the weekly numbers of deaths (which, as shown previously, is the mean squared deviation of the observations from their average). Our weekly errors between estimation and observation can therefore be measured by σ^2.

(iii) Now let us suppose that neither of the extreme cases is present—i.e., neither complete dependence nor complete independence—but that we have something between the two, as in Fig. 6, where the deaths certainly decline as the temperature rises but show some variability at each temperature. How precisely can we now state the number of deaths when we know the temperature? Let us draw through the points a line which represents, broadly, their trend. From that line we can read off the expected number of deaths at each temperature and compare it with the observed number in that week. The difference will be the error we make in using this line. We can calculate this error for each week and the average of these squared errors we can call S^2.

Are we any better off in our estimations of the actual weekly deaths by the use of this line than when we say that in each week we expect to see the average number of deaths that took place in all the weeks? We can measure our relative success by comparing σ^2 with S^2. If the two characteristics are entirely *independent* of one another (as in Fig. 8) the line we draw can have no slope at all and will pass at each temperature through the average number of deaths in all the weeks (there is nothing to make it higher or lower than the average at different temperatures). S^2 and σ^2 will then be the same. If the two characteristics are completely *dependent*, as in Fig. 7, then there is no scatter round the line at all and S^2 becomes 0. In practice we use as a measure of the degree of association $\sqrt{1 - \frac{S^2}{\sigma^2}}$ which is known as r or the correlation coefficient. If no association at all exists S^2 and σ^2 are, as pointed out, equal and r equals 0. If there is complete dependence S^2 is 0 and r equals 1. For any other degree of association r must lie between 0 and 1, being low as its value approaches 0 and high as it approaches 1.

The Use and Meaning of the Correlation Coefficient

The actual mode of calculation of the correlation coefficient is fully described in numerous statistical text-books, and attention will be confined here to its use and meaning. It is calculated in such a way that its value may be either positive or negative, between $+1$ and -1. Either plus or minus 1 indicates complete dependence of one characteristic upon the other, the sign showing whether the association is direct or inverse; a positive value shows that the two characteristics rise and fall together—e.g., age and height of school-children, a negative value that one falls as the other rises, as in our example of deaths and temperature. In the latter instance the value of the coefficient is, in fact, $-0{\cdot}90$. This figure shows that there is in this short series of observations a very high degree of relationship between the temperature and the deaths, but, as it and the graph make obvious, not a complete relationship. Other factors are influencing the number of deaths as well as the temperature. If we knew the equation to the line we could certainly predict the number of deaths that would take place in a particular week with a given mean temperature with more accuracy than would be possible without that information; but the diagram shows that in individual weeks we might still be a long way out in our prediction. It is the original variability in the number of deaths at *each* temperature than makes it impossible for the prediction to be accurate for an individual week, though we might be able to predict very closely the *average* number of deaths in a group of weeks of the same temperature. The advantage of the coefficient is, as previously pointed out, that it gives in a single figure a measure of the amount of relationship. For instance, we might calculate two such coefficients between, say, mean weekly temperature and number of deaths from bronchitis and pneumonia at ages 0–5, and between mean weekly temperature and number of these deaths at ages 65 and over, and thus determine in which of the two age-groups are deaths from these causes more closely associated with temperature level. We can also pass beyond the coefficient of correlation and find the equation to the straight line that we have drawn through the points. Reading from the diagram the straight line shows that at a

weekly temperature of 39° F. the estimated number of deaths is about 205; at a weekly temperature of 40° F. the deaths become about 185; at a temperature of 41° F. they become 165. For each rise of 1° F. in the mean weekly temperature the deaths will fall, according to this line, by some 20 deaths. In practice the method of calculating the coefficient of correlation ensures that this line is drawn through the points in such a way as to make the sum of the squares of the differences between the actual observations at given temperatures and the corresponding values predicted from the line for those temperatures, have the smallest possible value. No other line drawn through the points could make the sum of the squared errors of the estimates have a smaller value, so that on this criterion our estimates are the best possible.

THE REGRESSION EQUATION

The equation to the line can be found from the following formula :—

$$\text{Deaths} - \text{Mean number of deaths} = \text{Correlation coefficient} \times \frac{\text{Standard deviation of deaths}}{\text{Standard deviation of temperature}} \times (\text{Temperature} - \text{Mean of the weekly temperatures})$$

where the two means and standard deviations are those of all the weekly values taken together.

Writing in the values we know from the data under study this becomes—

$$\text{Deaths} - 167{\cdot}038 = -0{\cdot}9022 \, \frac{64{\cdot}310}{2{\cdot}867} \, (\text{Temperature} - 40{\cdot}908)$$

The fraction on the right hand side of the equation equals 20·24 so that we have—

$$\text{Deaths} = -20{\cdot}24 \, (\text{Temperature} - 40{\cdot}908) + 167{\cdot}038$$

Removing the parentheses and multiplying the terms within by −20·24 this becomes—

$$\text{Deaths} = -20{\cdot}24 \, \text{Temperature} + 827{\cdot}978 + 167{\cdot}038$$

or, finally,

$$\text{Deaths} = -20{\cdot}24 \, \text{Temperature} + 995{\cdot}02.$$

The figure −20·24 shows, as we saw previously from the diagram, that for each rise of 1° F. in the temperature the deaths decline by about 20. (For when the temperature is, say, 40° F., the deaths estimated from the line are $995{\cdot}02 - (20{\cdot}24)\,40 = 185{\cdot}4$ and when the temperature goes up 1° F. to 41° F., the estimated deaths are $995{\cdot}02 - (20{\cdot}24)\,41 = 165{\cdot}2$.)

The figure −20·24 is known as the *regression coefficient*; as seen above it shows the change that, according to the line, takes place in one characteristic for a unit change in the other. The equation is known as the *regression equation*. As far as we have gone our conclusions from the example taken is that deaths from bronchitis and pneumonia are in a certain area closely associated with the weekly air temperature and that a rise of 1° F. in the latter leads, on the average, to a fall of 20 in the former.

Precautions in Use and Interpretation

In using and interpreting the correlation coefficient certain points must be observed.

THE RELATIONSHIP MUST BE REPRESENTABLE BY A STRAIGHT LINE

(1) In calculating this coefficient we are, as has been shown, presuming that the relationship between the two factors with which we are dealing is one which a straight line adequately describes. If that is not approximately true then this measure of association is not an efficient one. For instance, we may suppose the absence of a vitamin affects some measurable characteristic of the body. As administration of the vitamin increases a favourable effect on this body measurement is observed, but this favourable effect may continue only up to some optimum point. Further administration leads, let us suppose, to an unfavourable effect. We should then have a distinct *curve* of relationship between vitamin administration and the measurable characteristic of the body, the latter first rising and then falling. The graph of the points would be shaped roughly like an inverted U and no straight line could possibly describe it. Efficient methods of measuring that type of relationship have been devised—e.g., the correlation ratio—and the correlation coefficient should not be used. Plotting the observations, as in Fig. 6 relating to temperature and deaths from bronchitis and pneumonia, is a rough but reasonably satisfactory way of determining whether a straight line will adequately describe the observations. If the number of observations is large it would be a very heavy test to plot the individual records, but one may then plot the *means of columns* in place of the individual observations—e.g., the mean height of children aged 6–7 years was so many inches, of children aged 7–8 years so many inches—and see whether those means lie approximately on a straight line.

THE LINE MUST NOT BE UNDULY EXTENDED

(2) If the straight line is drawn and the regression equation found, it is dangerous to extend that line beyond the range of the actual observations upon which it is based. For example, in school-children height increases with age in such a way that a straight line describes the relationship reasonably well. But to use that line to predict the height of adults would be ridiculous. If, for instance, at school ages height increases each year by an inch and a half, that increase must cease as adult age is reached. The regression equation gives a measure of the relationship between certain observations; to presume that the same relationship holds beyond the range of those observations would need justification on other grounds.

ASSOCIATION IS NOT NECESSARILY CAUSATION

(3) The correlation coefficient is a measure of *association* and in interpreting its meaning one must not confuse association with causation. Proof that A and B are associated is not proof that a change in A is directly responsible for a change in B or vice versa. There may be some common factor C which is responsible for their associated movements. For instance, in a series of towns it might be shown that the phthisis death-rate and overcrowding were correlated with one another, the former being high where the latter was high and vice versa. This is not necessarily evidence that phthisis is due to overcrowding. Possibly, and probably, towns with a high degree of overcrowding are also those with a low standard of living and nutrition. This third factor may be the one which is responsible for the level of the phthisis rate, and overcrowding is only indirectly associated with it. It follows that the meaning of correlation coefficients must always be considered with care, whether the relationship is a simple direct one or due to the interplay of other common factors. In statistics we are invariably trying to disentangle a chain of causation and several factors are likely to be involved. Time correlations are particularly difficult to interpret but are particularly frequent in use as evidence of causal relationships—e.g., the recorded increase in the death-rate from cancer is attributed to the increase in the

consumption of tinned foods. Clearly such concomitant movement might result from quite unrelated causes and the two characteristics actually have no relationship whatever with one another except in time. Merely to presume that the relationship is one of cause and effect is fatally easy; to secure satisfactory proof or disproof, if it be possible at all, is often a task of very great complexity.

THE STANDARD ERROR

(4) As with all statistical values the correlation coefficient must be regarded from the point of view of sampling errors. In taking a sample of individuals from a universe it was shown that the mean and other statistical characteristics would vary from one sample to another. Similarly if we have *two* measures for each individual the correlation between those measures will differ from one sample to another. For instance, if the correlation between the age and weight in all school-children were 0·85, we should not always observe that value in samples of a few hundred children; the observed values will fluctuate around it. We need a measure of that fluctuation, or, in other words, the standard error of the correlation coefficient. Similarly if two characteristics are not correlated at all so that the coefficient would, if we could measure all the individuals in the universe, be 0, we shall not necessarily reach a coefficient of exactly 0 in relatively small samples of those individuals. The coefficient observed in such a sample may have some positive or negative value. In practice we have to answer this question: could the value of the coefficient we have reached have arisen quite easily by chance in taking a sample, of the size observed, from a universe in which there is no correlation at all between the two characteristics? For example in a sample of 145 individuals we find the correlation between two characteristics to be +0·32. Is it likely that these two characteristics are not really correlated at all, that if we had taken a very much larger sample of observations the coefficient would be 0 or approximately 0? It can be proved that if the value of the correlation coefficient in the universe is 0, then (*a*) the *mean* value of the coefficients that will be actually observed if we take a series of samples from that universe will be 0, but (*b*) the separate coefficients will be scattered round that mean, with a standard deviation, or standard error, of $1/\sqrt{N-1}$, where N is the number of individuals in each sample. In the example above the standard error will, therefore, be $1/\sqrt{144} = 0{\cdot}083$. Values which deviate from the expected mean value of 0 by more than twice the standard deviation are, we have previously seen, relatively rare. Hence if we observe a coefficient that is more than twice its standard error we conclude that it is unlikely that we are sampling a universe in which the two characters are really not correlated at all. In the present case the coefficient of 0·32 is nearly four times its standard error; with a sample of 145 individuals we should only very rarely observe a coefficient of this magnitude if the two characters are not correlated at all in the universe. We may conclude that there is a "significant" correlation between them—i.e., more than is likely to have arisen by chance due to sampling errors. If on the other hand the size of the sample had been only 26 the standard error of the coefficient would have been $1/\sqrt{25} = 0{\cdot}2$. As the coefficient is only 1·6 times its standard error we should conclude that a coefficient of this magnitude might have arisen merely by chance in taking a sample of this size, and that in fact the two characters may not be correlated at all. We should need more evidence before drawing any but very tentative conclusions. This test of "significance" should be applied to the correlation coefficient before any attempt is made to interpret it. Somewhat more intricate methods are needed to test whether one coefficient differs "significantly" from another—e.g., whether deaths from bronchitis and pneumonia are more closely correlated with air temperature at ages 0–5 years than at ages 65 and over (see, for instance, The Methods of Statistics. By L. H. C. Tippett. London: Williams and Norgate Ltd. 1931. 15*s*.).

Summary

The correlation coefficient is a useful measure of the degree of association between two characteristics, but only when their relationship is adequately described by a straight line. The equation to this line, the regression equation, allows the value of one characteristic to be estimated when the value of the other characteristic is known. The error of this estimation may be very large even when the correlation is very high. Evidence of association is not necessarily evidence of causation, and the possible influence of other common factors must be remembered in interpreting correlation coefficients. It is possible to bring a series of characteristics into the equation, so that, for instance, we may estimate the weight of a child from a knowledge of his age, height, and chest measurement, but the methods are beyond the limited scope of these articles.

A. B. H.

CORRIGENDA.—In last week's article the formula in line 17 of the second column of p. 527 should read $n=(c-1)(r-1)$ and the numerator of the fourfold table on p. 528 should read $(ad-bc)^2\,(a+b+c+d)$.

KING'S COLLEGE HOSPITAL: NEW WING.—On Feb. 23rd Viscount Wakefield, vice-president of the hospital, opened a wing for private patients which has been presented to the hospital by the Stock Exchange Dramatic and Operatic Society and by other friends on the Stock Exchange. The building is 266 feet long and 80 feet wide and runs parallel with the main corridors of the hospital. The offices are on the side nearest to the hospital so that accommodation for the patients is separated from sounds connected with its work, but there is direct access to the X ray and other special departments in the main building. Above the entrance rises a tower 70 feet high in which are situated the suite of rooms for the resident medical officer and a muniment room for the safe custody of records; it is a memorial to the flight of Mr. Giles Guthrie from England to Johannesburg erected by his father, Sir Connop Guthrie. On the first floor there are eighteen single rooms for which the charge will be 8 guineas a week. The patient makes his own arrangement for the payment of fees for professional attendance, including the services of the pathologist and radiologist. In close proximity to the floor is an operating theatre specially provided for visiting surgeons. On the floor above is a complete maternity unit where accommodation is provided at varying charges ranging from 7 to 10 guineas in rooms with one, two, and four beds. The services of the resident medical officer will be available for antenatal attention as well as for the confinement, and a comprehensive fee can be arranged to cover both. On the floor above is a maternity isolation unit. In order to provide the additional staff for the new wing it has been necessary to extend the accommodation for resident medical officers, nurses, and maids. On these extensions there is a debt outstanding of £15,000. The sum of £8000 would enable the ground floor to be fitted up as a dental department readily accessible from the out-patient department, which would release the general ward of the hospital where it is at present housed for occupation by ordinary patients.

SPECIAL ARTICLES

HUNTER THE GREAT RESEARCHER*

BY LORD HORDER, M.D., K.C.V.O.

ON Monday in last week Lord Horder delivered the Hunterian Oration before the Hunterian Society. It will appear in full in the *Transactions* of the Society and was a masterly little disquisition on the ideals and performances of the great researcher. The orator came straight to his subject in the following way :—

"Hunter was not *only* a surgeon—it might sound invidious if I said 'not a *mere* surgeon'—he was a physician also, and a better physician in many respects than some of his contemporaries who practised in that branch of medicine. But more than either of these two things he was, first and foremost, a pathologist, in the best, and in the only true, sense of that word—a man who sought out the causes and the nature of diseases. He was also, as we know, a great anatomist and physiologist, and he made these two fields of research so wide that they embraced the whole animal kingdom. Hunter's anatomy and physiology were, as we term it, comparative as well as human. I suppose no man ever spread his net wider than he did in his effort to read a little in Nature's infinite book of secrecy. What he was after, however, and the little (as he would have thought it) that he did was bound up with pathology, a branch—shall I not say the root?—of surgery which, before him, scarcely existed. Even the physician's branch of medicine had precious little real science to support it, so that the whole of medicine gained greatly through Hunter's work.

TECHNICIAN AND PHILOSOPHER

"Sir D'Arcy Power, in his Hunterian Oration before the Royal College of Surgeons of England, used the phrase 'the Hunterian tradition' by which to express a dual legacy left by Hunter to our profession—namely, his technical and pathological trend which he gave to the study of surgery, and it was the latter part of his dual legacy with which I will deal, disclaiming any intention of estimating Hunter's technical ability as surgeon. I am convinced that whatever the degree of his technical skill, this was of far less moment as a gift to humanity than the opening up of that vast field of observation and investigation in pathology which laid the foundation for the surgery of the future. It does not appear that he himself introduced much by way of new operations, nor laid down new principles by way of surgical technique. The one great exception to this statement is his method of curing aneurysm of the popliteal artery. This was a much more common disease in his day than it is in ours, and before Hunter the current surgical treatment was to tie the dilated vessel above and below the sac and so obliterate it. Hunter, relying upon the adequacy of the collateral circulation in the leg below the knee, introduced the method of tying a single ligature round the artery in the thigh and allowing the aneurysm to shrink. This operation, said to have 'saved thousands of limbs and lives,' spread Hunter's fame more than anything else that he did, for it quickly superseded the old operation all over Europe. Its introduction was the direct result of work in many fields; in it he united a whole multitude of facts from anatomy, physiology, clinical experience, post-mortem examinations, and experiments on animals. Surgery before Hunter—what was it? The same old system that the Egyptians knew—making holes to let the evil spirits out. Phlebotomy was no more, purges and clysters—called by another name to-day—have carried on the same notion, but for evil spirits, read 'auto-intoxication.'"

Lord Horder then pointed out that after Hunter a great change took place in the studies of surgeons who, following him in the pursuit of science, became the chief anatomists equal as physiologists and pathologists with the physicians, who had previously held the scientific field. Undue stress he thought seems to have been laid upon whether Hunter proceeded in his researches mainly by deduction or by induction, while the conflict of philosophical methods led to confusion of thought and obscurity of language. The known tendency of the Scotch thinker is, he said, to proceed deductively and of the English thinker to proceed inductively; and it seems to have been assumed that the Scotsman working in London would find his native mental equipment embarrassed. Experience, of which there is quite a considerable amount, does not support this view. "It is idle to speculate what would have happened if Hunter had gone to a Scotch University and had been 'educated.' One possibility is that medicine would have lost John Hunter and been so much the poorer. He was, of course, chiefly inductive in his methods." The orator pointed out that Plato, Aristotle, Hippocrates, Galen, and Celsus in sequence had followed the deductive method, constructing dogmas and theories from the most meagre facts, and he suggested that the systematic reform of medical philosophy dated from Bacon as "an intelligent attempt to place the investigation of nature on a solid foundation." Hunter's excursions into deduction, he said, led to no scientific advance.

"But in induction he did much better. He anticipated the 'recapitulation theory' of Haeckel by pointing out that the embryo in each successive stage of its existence resembles the completed form of some lower order than itself. He concluded from a large number of studies that abnormalities are an expression of arrested development. He seemed also to anticipate Darwin in his teaching that structure is the ultimate expression of function and not vice versa. He was fond of teaching that the blood is alive, and though, here again, he seems to be flirting with an old, *a priori* vitalistic speculation, he seems nearly to have stumbled upon a very modern conception. And he got as near to Pasteur and Lister, from sheer experimental evidence, as to say that 'air of itself has no power to excite inflammation.' But though these examples show that Hunter was capable of taking the results of his inquiries into general conclusions, he was chary of doing so. As for abstractions which sought to take the place of demonstrable facts, his well-known advice to his pupil, Jenner, sufficiently repeats his own favourite method. 'Don't think—try; be patient, be accurate.'"

JENNER AND HUNTER

Lord Horder gave an interesting account of the close association between Jenner and Hunter, based on the long correspondence which took place between them, which he said epitomised the spirit, the tenacity, and industry of Hunter. In these letters Jenner was

*Abstract of the Hunterian Oration delivered before the Hunterian Society on Feb. 22nd.

thanked for his experiments with a hedgehog but urged not to ask questions but to try experiments, the problems put before him being so varied as the natural history of a cuckoo, the breeding of toads, the nesting of birds, the temperature of vegetables—"Have you large trees of different kinds that you can make free with? If you have, I will put you upon a set of experiments with regard to the heat of vegetables"—again "Have you any eaves where bats can go at night? If you have, I will put you upon a set of experiments concerning the heat of them at different seasons." "Have you got the bones of a large porpoise? Is ever the salmon spawn seen after she has parted with it?"

In the course of this correspondence with Jenner it became known to Hunter that Jenner had in some way lost the affections of the "woman of fortune" on whom he had set his hopes. Hunter's condolence, and also his effort at consolation, are both characteristic. . . . "I own I was at a loss," he writes, "to account for your silence, and I was sorry for the cause. I can easily conceive how you must feel, for you have two passions to cope with, that of being disappointed in love, and that of being defeated; but both will wear out, perhaps the first soonest . . . but 'let her go, never mind her.' I shall employ you with hedgehogs . . . get a hedgehog in the beginning of winter, and weigh him; put him in your garden . . . then weigh him in the spring and see what he has lost."

THE HUNTERIAN "TRADITION"

Lord Horder continued: "And so, after just 200 years, the tradition comes down to *us*. What are we doing with it? Are we carrying it on? *Can* we carry it on? For that is what matters. Institutions are doing their utmost to carry it on. This Society, as I have remarked; the College of Surgeons, with its great museum—'Hunter's monument,' as the president called it last week—where Wren's telling epitaph would be singularly apt—the enlarged laboratories, the Buckston Browne experimental farm, with its increased equipment, and capable of almost indefinite extension. . . . But what of *us*, the individuals: how is it with *us*? (1) Have we Hunter's power of concentrated industry? Someone has said that genius is as much a matter of perspiration as inspiration, and he must surely believe that if genius is not an infinite capacity for taking pains, at least it takes a genius to exercise this rare quality. I think some of us do possess this power of dogged, persistent effort. When I watch some of my colleagues who are in the van of research at their work I feel ashamed of the laziness of my own mind, the readiness with which it lets go its task, and the ease with which it yields to discursiveness. (2) Have we Hunter's inquiring mind, his lust to know, for the sake of knowing? (3) Have we his intellectual courage? Or do our minds run away when the struggle goes against us? (4) Have we Hunter's spirit of accuracy? Are we, as he was, filled with a divine discontent with any proof except that which carries an inescapable conviction? Remember those cuckoos' stomachs, those hedgehogs—more and more must be examined until the fact we are seeking cannot be avoided. (5) Are we, perchance, saying there is so little left to find out? We know all about hedgehogs—*or do we*?

"We are in a different part of the field, of course, for the pioneers have made a tremendous clearance. But there is probably still as much to be done as ever, though of a different kind. Or do we think that because we are so specialised in our several spheres, and research is therefore much more intensive, our problems are less surmountable than those which Hunter set himself? Tracking down 'elementary bodies' would seem, on the face of it, to be a more stubborn task than discovering the lymphatic system. Heading off a pandemic of influenza, with its almost elemental ravages, and getting its precursors and its 'trailers' and 'settings' accurately taped, seems work for gods rather than mere men. So much easier still to talk about 'epidemic constitutions' and leave it at that. Recognising clearly the factors which go to make a balance, or an 'imbalance,' in a man's hormones, and getting control over this delicate adjustment—surely Hunter never had a task which was the like of this? Solving the riddle of the endocardial infection. Understanding the mechanism of high and of low arterial pressures. Diagnosing cancer before as yet it yields what we call 'physical signs' or suggests its presence by recognisable deviations from the average in the radiologist's shadow-pictures. Determining sex. Preventing a whole heap of diseases which, once established, we cannot cure."

THE STRESS OF TO-DAY

The orator concluded by pointing out that these problems were for us to-day. "We have a corpus of knowledge to draw upon, completely hidden from Hunter, but are deflected by the domination of the age. Life has us by the throat. We are caught between instinct and reason; we have let go the former but we have not yet got a sure hold upon the latter; we are no longer savage nor are we yet sapient. To 'the intruding rabble of men, and books, and institutions' that broke in upon Emerson's peace we now add a host of new distractions and disturbances. What are we going to do about it? Are we also going to become a mob or are we going to maintain our intellectual freedom? To carry on the Hunterian tradition we must take to heart the Sage of Concord's warning: 'Let us not rove, let us sit at home with the cause . . . at times the whole world seems to be in a conspiracy to importune you with emphatic trifles. Friend, client, child, sickness, fear, want, charity, all knock at once at thy closet door, and say—"come out unto us." But keep thy state; come not into their confusion.' A few men and women are, I think, bent upon doing so. Unlike 'those who went upon the Holy Quest' they are not 'lost in the quagmire' nor do they follow 'sandering fires.' If only the politicians can keep the ring for them. God help them to do so! I suppose politicians do *know* how important these things are, how vital to all of us and to the future? When Pitt was approached with the object of getting the government of his day to purchase Hunter's unique collection of specimens he is reported to have said: 'What! Buy preparations? Why I have not money enough to purchase gunpowder!' History repeats itself. At first thought it would seem foolish to grudge the exchange of scientific inquiry for bombing planes, seeing that others have decided that if it is to be guns *or* butter then it is to be guns. But at second thought comes wisdom, and we remember that even dictators are transient, if not trivial, whereas these other things are eternal. Surely it is better to know the behaviour of a cuckoo's stomach than to organise a nation for war? Dr. Johnson once said that 'the man who is growing great and happy by electrifying a bottle wonders to see the world engaged in the prattle about peace and war.' The thought is the same (and I have the satisfaction of knowing that on this occasion I had expressed mine before I came across Dr. Johnson's). I feel quite sure that if John

Hunter were amongst us to-day he would risk the same charge of simplicity or of impertinence as did Johnson's physicist. Nor would he be ashamed if the gas-bomb found him so occupied.

"Cannot you *see* this little man (Hunter stood 5 ft. 5 in. in his boots) with his shock of red hair, his exuberant vitality, his restless curiosity, making his attack upon the new world of facts, probing, measuring, comparing, his tools so rudimentary, his methods all his own, 'grappling Nature,' laying her under tribute, wrestling with her like Jacob with the angel, and saying, as Jacob said, 'I will *not* let thee go except thou bless me.'

"Let us imagine he *is* here, as indeed he is, living on amongst us in the tradition that he left behind him. Let us be worthy of him and of it."

MEDICINE AND THE LAW

The Counting of Swabs

AN inquest at St. Albans last month raised two points of some importance. A married woman had entered the Hill End Hospital as a patient in 1922. Her husband, who had not seen her for ten years, told the coroner that he consented to a surgical operation being performed upon her about 14 months ago; he was afterwards informed that the operation had been successful. On Feb. 2nd, 1937, the patient died. Post-mortem examination showed that death was primarily due to myocardial degeneration: there was also localised peritonitis, probably set up by the presence of a small gauze swab lightly attached to the intestines and accompanied by a small pocket of pus. So far as was known, the deceased had undergone only one operation. The surgeon who, under arrangement with the Herts County Council, had operated on the patient, described the routine work of using and checking swabs; it was, he said, the duty of the nursing staff to check them and the operating surgeon was obliged to rely on the nurses in this respect. The assistant matron of the hospital, in charge of the operating theatre on the occasion concerned, explained how she had checked the swabs in bundles of ten, handed clean ones as required and counted the dirty swabs thrown away into a bucket. She could not now say how many were then used. She was satisfied that every swab used at the operation had been accounted for. A hospital sister, who assisted the previous witness, confirmed the checking and counting: her evidence indicated that, if any mistake had occurred, both she herself and the assistant matron must have made the same mistake.

The first point of medico-legal interest, therefore, was the fact that the inquest provided one more occasion for speculation whether the responsibility for checking the swabs lies with the nursing staff or whether the surgeon, who puts them in, has a legal duty to see that they are all taken out. In other words, do the surgeon and nurses act as a team or does the surgeon remain solely liable? A swab, inadvertently left in the patient's body, is a potential danger. Is the mere fact of its presence in the body conclusive evidence of negligence, or is it merely prima facie evidence? In Crotch *v.* Miles (*Lancet*, 1930, **1**, 717) Lord Hewart told the jury that it might well be that, in the actual course of the operation, while the surgeon was cutting and opening and attending to his surgical task, it was neither to be expected nor desired that he should be busying his mind with the counting of every swab and forceps or with the question whether one was missing. Lord Hewart, however, offered the jury the suggestion that they might possibly think it part of the surgeon's duty to concern himself with that inquiry at the close of the operation. "It may well be that any delay would be prejudicial if it occurred before the body of the patient was stitched up; but you may think that afterwards, before the surgeon departs, it is reasonable that he should personally satisfy himself that the number is correct and that there is nothing missing." The jury, therefore, in Lord Hewart's view, had to decide upon the particular facts of the case whether there had been negligence on the part of the surgeon or not. The legal position still awaits simplification.

The second point in the St. Albans case arose out of the statutory duty to report the cause of death. Every death in a lunacy institution within his jurisdiction, said the coroner, had to be notified to him within the prescribed time, so that he might consider whether the facts required inquiry. No mention was made in the report from the hospital to the coroner of the discovery of the swab. The pathologist who made the post-mortem examination had been in doubt whether the prescribed form of report contained any particular place where the information could have been appropriately entered. The details entered on the form were settled in discussion between the pathologist and the medical superintendent. There was clearly no intention to conceal facts from the coroner, since the medical superintendent personally reported the full circumstances to him; the pathologist, when filling in the form, was aware that this oral report was being made. Had it been desired to keep the facts from the coroner, the coroner would be unaware of them to-day. The coroner explained to the jury the necessity of complete information being given to him. He probably had in mind that Form 33 appended to the Mental Treatment Rules asks for the immediate cause of death, the morbid conditions (if any) giving rise to the immediate cause, and the other morbid conditions (if important) contributing to death but not related to the immediate cause. Form 10 also, the post-mortem record, provides a space for "any special notes." The jury returned a verdict of "death by misadventure": nothing was said of any negligence on the part of the surgeon. The coroner indeed had gone so far as to say that an operating surgeon could hardly be asked to count and check swabs, but should be allowed to leave these details to the persons specially trained and trusted for this purpose.

Allegation of Negligence Withdrawn

An allegation of professional negligence was handsomely abandoned by plaintiff's counsel on Feb. 22nd before Mr. Justice Lawrence, although, as this step was not taken till the case was called on for trial, the defendants must first have been put to considerable trouble and expense in preparing their defence. The action was brought against the Governors of the Royal Masonic Hospital at Ravenscourt Park and also against the house surgeon, in spite of the fact that he had neither advised nor performed the operation which gave rise to the case. The plaintiff (on behalf of herself and her infant son) claimed damages in respect of the death of her husband. When the patient was admitted to hospital, it was considered that the only chance of saving his life lay in an immediate operation. A specialist performed it, but the patient's condition was such that he died two days later. The plaintiff complained that the operation had been negligently performed and that,

since the patient had not consented to it, there had been an actionable assault. Plaintiff's counsel frankly admitted that the claim would, at the best, have been a difficult one but, by the time the hospital's records and documents had been examined, "it became apparent that not only was there no hope of succeeding but no ground whatever for proceeding with the claim." All allegations were withdrawn; the hospital took judgment with costs but does not propose to enforce them against the widow. Every successful resistance to claims based on suggestions of professional negligence does service to the profession as a whole.

Mushroom Poisoning

Not long ago a plaintiff succeeded in obtaining damages for food poisoning in a case where the connexion between the menu and the illness was not conspicuously clear. In Harris *v.* J. Lyons and Co., decided last week, the plaintiff had eaten a meal including mushrooms one evening at one of the defendant company's restaurants. He felt very ill in the middle of the night; he suffered from a painful affection of the skin, and his medical attendant, having heard what the patient had eaten, diagnosed mushroom poisoning. He formed that opinion, in the words of Mr. Justice Swift, with perfect honesty and professional propriety. Two doctors called for the defence, however, disagreed with this diagnosis. Both were experienced in mushroom poisoning and its effect on the skin; in their view Mr. Harris was suffering from erythema multiforme. With this conflict of evidence, said the judge, it was impossible for the court to hold that without any doubt Mr. Harris was suffering from mushroom poisoning. There was a doubt, and Mr. Harris, not having discharged the onus of removing the doubt, could not succeed. The defendants, not content with relying upon the failure of the plaintiff's case, offered a mass of evidence to rebut the suggestion of negligence. They could not allow a customer to say that a dinner in one of their restaurants meant an illness. They gave the life-history of their mushrooms from the first chapter of the sterilised spawn in carefully superintended beds at Worthing to the last chapter when the chef at Olympia prepared the dish for table. The judge announced that no negligence could be attributed to the defendants. They had been most careful. He was sorry for the pain Mr. Harris had suffered, but the court could not dip its hand into the company's pocket to award compensation to Mr. Harris unless satisfied that the company was responsible for Mr. Harris's condition. Mr. Harris had failed to prove that post hoc was also propter hoc.

PARIS

(FROM OUR OWN CORRESPONDENT)

EARLY DIAGNOSIS OF UNDULANT FEVER

THE undulant fever research centre at Montpellier has issued a report by R. M. Taylor, M. Lisbonne, and L.-F. Vidal on the symptomatology of the disease as shown in 333 cases in which the diagnosis was confirmed by serological tests or blood culture. In 135 cases *Brucella melitensis* was grown from the blood, and in 8 cases *Br. abortus bovis*. The nine most prominent clinical manifestations were asthenia, fever, excessive perspiration, attacks of shivering, anorexia, constipation, insomnia, pain in the joints and muscles, and irritability. Asthenia was noted in every case, fever in 99 per cent., and irritability in 41 per cent. When these nine manifestations were classified according to the stage of the disease at which they first appeared, asthenia was found to be the earliest and irritability the latest. A classification of 322 cases according to the diagnoses first made demonstrated a high proportion of mistakes. In 90 cases the doctors first consulted had been prudent enough to leave the diagnosis open. In the remaining 232 cases the diagnosis was usually made with more promptness than accuracy, for among the early diagnoses only 89 correctly attributed the illness to undulant fever. In as many as 71 cases (31 per cent.) the initial diagnosis was influenza; next came infection of the respiratory tract (19 cases), and typhoid or paratyphoid fever (16). Other mistaken diagnoses included articular rheumatism, sciatica, meningitis, orchitis, and neurasthenia—which illustrated the polymorphism of the disease, not to mention the diagnostic versatility of the practitioners concerned. There were only four cases in which malaria had been incorrectly diagnosed, but as Dr. Taylor and his colleagues point out, this figure would assuredly have been much higher had malaria been endemic in the neighbourhood.

LICENSED PROSTITUTION

M. Henri Sellier, Minister of Public Health, is already encountering opposition to his proposal to add France to the abolitionist countries. A speech recently delivered at Lyons by Dr. C. Fouqué was a glowing, almost apostolic, defence of the licensed brothel and of its occupants. Lyons, by the way, has an interesting system of medical supervision of prostitution devised and practised by two doctors in this town, and the alleged efficacy of this system was one of the arguments advanced by Dr. Fouqué in support of the old order of things. A perusal of his speech, reported at considerable length in the *Siècle Médical* for Feb. 15th, must induce many a reader to marvel. It appears that Dr. Fouqué is a convinced believer in Lombroso's conception of certain women fated from birth to become prostitutes. While all men are supposed to be polygamous by instinct if not in act, and most women are supposed to be monogamous by circumstance if not by instinct, there is this Lombroso-discovered type whose functions are apparently as valuable as they are innate. Dr. Fouqué spoke of this born prostitute as of one who must always be treated with kindness and solicitude, "almost with respect, for she accomplishes, unconsciously perhaps, a social rôle of the greatest utility." If M. Sellier's opponents are to take their cue from such a speech as this, with its emotional bias and its avoidance of such disagreeable facts as are to be gleaned from the abolitionist countries, he may count himself happy, for the French are essentially logical.

CHLORINATION OF THE DRINKING-WATER

The vital statistics of Lyons make instructive reading in view of the verdunisation of the city's drinking-water. The general mortality in 1936 was 10·35 per 1000 inhabitants, whereas the average for the five years preceding the introduction of chlorination was 13. Between the ages of 0 and 20 there has been a decline in the general death-rate by 47 per cent. within the same two periods. As for the typhoid mortality, it has been reduced from 3 to 1 per 100,000 inhabitants. The behaviour of the death-rates in Paris before and after the introduction of chlorination is remarkably similar to that of Lyons, and a campaign is now afoot in favour of compulsory chlorination of the main supplies of drinking-water throughout the country.

MEDICINE STAMP DUTIES

REPORT OF SELECT COMMITTEE

LAST November fifteen members of the House of Commons were appointed to consider the duties of excise chargeable under the Medicines Stamp Act, 1802, the Stamp Act, 1804, and the Medicines Stamp Act, 1812, and any enactment amending those Acts, and to report thereon and make such recommendations for the alteration of those duties or otherwise as they thought fit with a view to re-forming the law relating thereto. This select committee freely used its powers to send for persons, papers, and records, and its report was issued last week (H.M. Stationery Office. 3*d*.).

CONCLUSIONS

The committee came unanimously to the following conclusions :—

(1) That the existing Stamp Acts, passed over 100 years ago, are out of date, largely obsolete, and quite inappropriate to modern requirements.

(2) That owing to out-of-date exemptions and to a number of judgments in the courts, wholesale avoidance of duty has been practised which has led, during the last nine years, to a remarkable decrease in the yield of the duty (nearly 50 per cent.).

(3) That the law should be simplified, thus removing those obscurities which at present give rise to numerous anomalies and add greatly to the difficulties of administration.

(4) That, in spite of some evidence to the contrary, the trade in medicinal articles is, in their opinion, one which is suitable for taxation.

(5) That the rate of duty should be lowered, particularly in the lower ranges, and more evenly graduated.

(6) That it is undesirable that the same product should be sold by different vendors stamped and unstamped.

(7) That a far larger range of preparations should be made liable to duty.

RECOMMENDATIONS

Arising out of these conclusions the committee recommends :—

(1) *Repeal.*—That the Acts of 1802, 1804, 1812, Section 2 of the Finance Act, 1927, and all other existing legislation on the subject of Medicine Stamp Duties be repealed.

(2) *Dutiable articles.*—That, subject to the *exemptions* mentioned below the articles in the following list should be liable to a duty based on the retail selling price :—

Preparations or substances of any sort, including medicines, medicaments, medicated articles, drugs, herbs, fumigants, inhalants, disinfectants, antiseptics, soaps, tooth-pastes, tooth-powders, mouth-washes, medicated wines, natural or artificial mineral waters or compositions for making such waters, confectionery, toilet preparations and cosmetics to be used or applied externally, internally, or otherwise, as medicines or medicaments, which are recommended, held out, or advertised in any way whatsoever either directly or indirectly (whether by public display, wireless telephony or other mechanical reproduction of the human voice, or by label, notice, circular, or other written recommendation or otherwise) for the prevention, cure, or relief of any human ailment, defect, disorder, condition, or habit, or for the treatment of any part of the human body or for the protection or maintenance of bodily health.

(3) *Duty scale.*—That the present scale of duties should be revised as follows :—

Retail price excluding duty.				Rate of duty.
Exceeding		Not exceeding		
—	....	½*d*.	....	¼*d*.
½*d*.	....	1½*d*.	....	½*d*.
1½*d*.	....	3*d*.	....	½*d*.
3*d*.	....	6*d*.	....	1*d*.
6*d*.*				*1*d*. for the first 6*d*. and 1*d*. for every 6*d*. or part of 6*d*. over 6*d*.

The committee was much inclined to recommend a direct ad valorem sales tax of 16⅔ per cent.—i.e., 2*d*. in the 1*s*.—but was persuaded that this would be more difficult to administer and would cause more disturbance to existing prices and other arrangements of manufacturers.

(4) *Excise licence.*—That the licence of 5*s*. per annum be continued as heretofore.

(5) *Exemptions.*—That exemptions be granted to—

(*a*) all medicines, &c. (as set out above), recommended and sold solely and exclusively to registered members of the medical or dental professions ;

(*b*) all preparations, &c., supplied to registered medical or dental practitioners for use in the discharge of their professional duties, also all preparations, &c., supplied to registered pharmacists or registered medical or dental practitioners for use in dispensing as a component part of medicines prescribed by such practitioners ;

(*c*) all medicines, &c., exported for use or consumption abroad ; and

(*d*) all British spa waters consumed only at the place of origin.

FURTHER SUGGESTIONS

The committee went on to urge consideration of the propriety of taxing foods and certain appliances (such as deaf aids), beverages (alcoholic and otherwise), and other preparations widely advertised as possessing properties beneficial for health. If it is found difficult to distinguish between cosmetics which claim to be remedial and those which do not, the best course might be to tax all cosmetics.

Should control of the trade in medicines and appliances be deemed desirable, for the protection of the public, the committee believes that the best method of achieving this would be a system of examination and registration of all advertised medicines and appliances.

CONTROL

The committee endeavoured to limit its inquiry as far as possible to the fiscal aspect of the question. Strong opinions were, however, expressed by certain witnesses in the course of the inquiry that some form of control of the medicine trade was desirable, to safeguard the public from fraudulent exploitation. Authoritative statements were made to the effect that people (largely the poorer and less well-educated) spend more money than they can afford on remedies of little or no efficacy, with an accompanying indirect danger to health as a result of their not seeking medical or surgical treatment in time. "Though we have reason to believe," the report runs, "that matters are not as bad as they were, we are strongly of opinion that the appeal to fear which is the underlying motive of large numbers of advertisements, not only of medicines in the strict sense but of such articles as those referred to at the beginning of paragraph 6, is psychologically harmful." The reference here is to products such as tonic foods, beverages, appliances, meat extracts, cereals, bread and even mustard which, though not strictly medicines, are widely advertised, in effect, for the relief, cure, or prevention of some human ailment.

PARLIAMENTARY ELECTION FOR THE COMBINED ENGLISH UNIVERSITIES

THERE will shortly be an election for the representation in Parliament for the Universities of Durham, Manchester, Liverpool, Leeds, Sheffield, Birmingham, Bristol, and Reading. Nomination day is to-day, March 5th, and polling will commence on Monday, March 15th. Sir Henry Brackenbury, a vice-president of the British Medical Association and of the Association of Education Committees, is standing as an independent; Sir Francis Lindley, recently ambassador extraordinary to Japan, as the national conservative and constitutional candidate; Mr. T. E. Harvey, formerly M.P. for West Leeds, as an independent progressive; and Mr. F. O. Darvall, director of research and discussion for the English-Speaking Union, as an independent candidate to the extent that he will not accept any party whip but at the same time will give general support to the National Government. In his election address, Sir Henry Brackenbury, the only medical candidate, says:—

"The main hope for the future of this country is the cultivation of childhood and the full development of all its immense potentialities. The chief care of the nation should be to help and encourage motherhood and to make it as safe as possible; and to secure for children, even from the prenatal stage up to full adolescence, such a physical and mental environment as will permit of the development of a complete and many-sided personality. I appreciate the efforts which the present Government have made and are still making to these ends; but bolder, more continuous, and more coördinated efforts are required. A fuller and integrated scheme for a national maternity service is immediately necessary. Nursery and open-air schools should be further encouraged, and many of the older school buildings should be radically altered or replaced. The provision of playing fields, gymnasia, and swimming baths should be facilitated. Restrictive regulations on secondary school buildings, made when economy was urgently required, should be rescinded; in the planning of new schools, both elementary and secondary, due regard should be paid to the provision of suitable and sufficient dining-hall and kitchen accommodation. A larger proportion of specially qualified, trained, skilled teachers is required in most schools, not least in those for infants and junior scholars and for retarded children. The coming considerable fall in the number of children of school age should not be used for an immediate reduction in teaching staffs, but rather as an opportunity for securing smaller classes and a higher proportion of teachers to children. It should be made possible for teachers to take their due share in public life."

On the urgent question of nutrition, while pointing out that there are no exact criteria by which degrees of nutrition can be measured, Sir Henry points out that recent statistics show that in the elementary schools there are definite proofs of under-nourishment, while the inter-relationship between physical training and nutrition and mental training is so close that they cannot properly be separated. He says:

"I am in full sympathy with the proposals of the present Government in this regard. I was a member of the Executive Committee of the Central Council of Recreative Physical Training and of the Special Committees of the British Medical Association on Nutrition and on Physical Education, which have had so profound an effect in guiding public opinion and formulating policy on these questions. I hope that experience gained in these investigations and surveys might prove useful in the designing of practical measures for development. The gaps still remaining in the continuity of care for children and young persons should be filled; and the permitted hours of labour of those who have entered industry shortened. The dependants of persons insured under the National Health Insurance Acts should be included in that health system, and some needed extensions and improvements of that service should be effected. Indeed, the time is ripe for the initiation of a comprehensive general medical service for the nation based upon the prevention of disease, the promotion of positive health, and the provision of skilled medical care and attention, both general and specialist, for those who are ill. Such a scheme should be established after full consultation with the medical profession. The need for the care of mental health, especially for those distressing conditions of fear, anxiety, obsession, and the like, both in children and adults, which cause about one-third of the incapacitating illness of the country, is quite as great as that for attention to physique and to bodily ills.

"Biological, psychological, and medical research into many aspects of maternity, mentality, and educational methods, as well as research into various branches of technology and agriculture, should be more fully aided by the State, preferably under the auspices of the universities of the country."

Pointing out that a well-educated and properly used medical profession is the best safeguard to the public health, Sir Henry stresses the great importance to the public of medical education, a subject with which he has been prominently concerned in many recent inquiries. "I am convinced," he says, "that most of the changes in the newly prescribed curriculum will tend to the improvement of what was already good, changes in medical science, social needs, and pedagogic methods are so rapid and significant that continued efforts are required to keep medical education fully adapted to the needs of the community."

Sir Henry concludes his address by affirming his reliance on the League of Nations, whose success in many spheres, he points out, has been far greater than is commonly supposed; certain major failures he holds to point to the greater effectiveness which might be arrived at by a modification of methods.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED FEB. 20TH, 1937

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 1587; diphtheria, 1156; enteric fever, 30; pneumonia (primary or influenzal), 1881; puerperal fever, 46; puerperal pyrexia, 136; cerebro-spinal fever, 45; acute poliomyelitis, 5; encephalitis lethargica, 10; continued fever, 1 (Leatherhead); dysentery, 59; ophthalmia neonatorum, 93. No case of cholera, plague, or typhus fever was notified during the week.

Notifications of acute pneumonia in England and Wales were only 7 per cent. above expectation. In London itself there were 55 per cent. below.

The number of cases in the Infectious Hospitals of the London County Council on Feb. 26th was 3301, which included: Scarlet fever, 841; diphtheria, 1002; measles, 30; whooping-cough, 571; puerperal fever, 18 mothers (plus 10 babies); encephalitis lethargica, 283; poliomyclitis, 3. At St. Margaret's Hospital there were 19 babies (plus 9 mothers) with ophthalmia neonatorum.

Deaths.—In 122 great towns, including London, there was no death from small-pox or enteric fever, 9 (0) from measles, 4 (1) from scarlet fever, 43 (9) from whooping-cough, 35 (2) from diphtheria, 39 (12) from diarrhœa and enteritis under two years, and 423 (33) from influenza. The figures in parentheses are those for London itself.

Of the 339 deaths from influenza in the great towns of England and Wales outside Greater London, the largest totals were reported from Liverpool 29, Manchester 25, Birmingham 23, Stoke-on-Trent 19, Hull 13, Newcastle-upon-Tyne and Walsall each 11, Leeds and Middlesbrough each 10. With the sole exception of Leeds all these figures are lower than in the previous week. Corresponding figures for Scottish and Irish towns were: Edinburgh 14, Glasgow 12, Dublin 20, Belfast 6—in each case except Belfast a drop on the previous week.

Birmingham reported 2 deaths from measles. Fatal cases of whooping-cough were scattered over 20 great towns: Liverpool reported 7, Manchester 4. Fatal diphtheria was reported from 27 towns: 3 from Wolverhampton, not more than 2 from any other.

The number of stillbirths notified during the week was 268 (corresponding to a rate of 40 per 1000 total births), including 41 in London.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index.

FROM A RUSTICATING PATHOLOGIST

II

WHY do we not save domestic trouble by having meat at one meal and pudding at another, or meat on Mondays, Wednesdays, and Fridays, pudding on Tuesdays, Thursdays, and Saturdays, and both on Sundays? Why do we have both approximately twice a day? Women talk a good deal about labour saving in the home though they do not really seem to do much about it. I suspect indeed that what they really want is to get rid of one piece of labour so that they can add or substitute another; electrical carpet-sweepers, for example, do not actually diminish the amount of work put into cleaning, they enable more to be done with the same amount of work and the standard of cleanliness to be raised; moreover they have the fascination of a gadget. Anyway any suggestions made by men (who naturally incline towards bestial habits of life) in the way of simplifying the feeding business do not seem to be very welcome. Why not use the same plate for successive courses, wiping it up if you like in between with a piece of bread? Well, it just isn't done; what may be mixed with advantage in vivo would upset the constitution if mixed in vitro, though why bacon and marmalade should be more revolutionary than mutton and red currant jelly is hard to see, and I did once see a hurried gentleman in an American hotel who had fried eggs, waffle cakes, and maple syrup for his breakfast and mixed them all up together on one plate, and got outside them in about a minute. And when, seeing that our Ruby was out and that washing up would presently ensue, I proposed that we should clean up our plates a bit and then use the backs, I soon felt that the mills of God were grinding very thoroughly. This washing too is not what it was for that eminently practical and labour-saving device the plate-rack is no longer comme il faut; each plate has to be wiped dry and polished, which bacteriologically is a dirty thing to do compared with putting them up on edge to dry themselves. Small wonder that some people take to newspapers.

* * *

Now I have the highest respect for the essential soundness of the domestic habits and customs which are imposed on us by our women out of their instinct and accumulated unconscious experience. I do not suppose that anyone could prescribe a more perfect diet than what is supplied for her family by a sensible woman who is not restricted by money. The tale of modern dietetics is as good a yarn as anyone has ever had to tell, and one of its most interesting features is not that it has told us what to eat but that it has explained why we eat what we do. To work out such an empirical scheme is a wonderful testimony to woman's capacity to see the connexion between long distance causes and effects which is evidently, from the history of the progress of human intelligence, not at all an easy thing to do. Remembering too what a plight we should have been in if we had all been compulsorily fed by the physiologists say about 1910, I should be very chary about challenging any of our accepted dietetic habits—accepted that is by ordinary people who have enough money, not by freaks and reformers. In some instances accepted practice seems to be certainly wrong in its development—e.g., in the idea that what is known as "offal" to the butchers is no longer genteel, whereas we have every reason to suppose that a moderate supply of livers, kidneys, hearts, and, with more hesitation, haggis is very good for us; as a great placard in Manchester used to say, "The King eats tripe; why not you?" And seeing that most of our modern knowledge comes from the rat, it may be taken as germane that animals are very fond of "offal"; when Martha (a puppy) kills a rat while Mary appropriately looks on, Shadrach and Meshach (the kittens: Abednego died untimely) wolf the guts and viscera but they leave the muscle alone unless they are hungry, though they will scrunch up the head apparently to get the brain which always used to be a human delicacy at pig-killing and may be of some unrealised importance; I do not remember ever hearing anything about the nutritive qualities of brain. But on the whole practice is without doubt sound, and I have no desire to dispute the propriety of having meat and pudding at the same sitting; what I should like to know is the reason for it. Is it something to do with the stimulation of the stomach by meat to secrete gastric juice, or is it that the liver likes to have the amino acids and carbohydrates presented to it about the same time, or is it merely an illustration of the truth that man does not live by bread alone but needs the right æsthetic circumstances to get the best out of his meals? After all, meals are perhaps meant as much for conversation as for nourishment.

* * *

Another custom which causes an enormous amount of work all over the world is the habit of cooking food, and there does not seem to be any very complete explanation of why it is done, yet the proportion of uncooked food we eat is very small. No animal cooks its food, and man may have taken to it because he made a fire to warm himself and found that roasting a piece of flesh made it more tasty. But the habit is far more widespread than are the climatic conditions which need artificial heat (having just read the directions for writing for THE LANCET I see that I ought to have written "cooking is done in hot as well as cold places," but let it pass), and man is evidently strongly of opinion that cooked food is better for him than raw or at least that he likes it better; indeed anyone who regularly ate raw mutton chops in England nowadays would be looked upon as a disgusting fellow, little better than a cannibal. Yet man can live on uncooked meat and vegetables; raw minced flesh was the mainstay of some therapeutic diet or other, and there are quite a number of people who eat raw carrots and even raw cabbages either to keep away cancer or on general hygienic grounds. But the habit is certainly to cook; one of the great virtues of the seal is that he carries with him the oily fat with which his flesh may be cooked in the Arctic whereas fish do not. The general explanation of cooking would probably be that it makes food more digestible. This seems true for some vegetables at any rate; it is said that one of the troubles of continuous travel at high altitudes as in Tibet is the difficulty of properly

cooking rice and the porters get the stomach-ache and grow gloomy. The modern canned pea too, being well autoclaved, seems to lie easier in the stomach than the freshly boiled little bullets which are often provided. But these mâtters of the stomach are largely questions of habits and training, and the custom of cooking was evolved by a young and vigorous population whose chief concern was probably to get enough of something. Experiment too is said to show that raw meat is actually digested a good deal more easily than roast or boiled. The whole business seems to need explanation; meanwhile I hope to go on having well-cooked meals. It is possibly a question of de-naturing the proteins; it may be easier (using Huxley's illustration) for man to turn cooked crab into human proteid than for a crab to convert raw sailor. Or perhaps man realised at an early stage what we are only just learning about milk—that it is better to more or less sterilise it. The chances of infected or contaminated food were of course much greater than they are now; the old dame who kept my first school dated from the time when water was pretty dangerous stuff, and when we were heated in innocent play and likely to drink a lot she insisted that it must be first boiled; unfortunately it was warm when it reached us and beastly so, if we could slink off, we drank from a cattle trough in the field.

* * *

Most of the modern work on nutrition has concerned infants and children, perhaps because they are more amenable than grown-ups and less opinionated and, like rats, are prepared to eat what fate and elder people heap upon their plates. The good results are everywhere apparent, and there is no more striking difference between England of to-day and thirty years ago than the appearance of the children, in town and country alike and perhaps particularly in the country, much of which was, and unfortunately some still is, thoroughly slummy. It does not of course all come from better feeding; boots, clothes, and ideals have all changed, and there has been a general increase in the standard of life. But food seems to have a good deal to do with it. What some people have wondered at is whether these larger, heavier, rosier children will in the end make healthier men and women and better citizens; to be big is obviously uneconomical unless bigness is correlated with other, more human virtues, and plainly anything comparable to the monstrous rats and guinea-pigs which are produced experimentally would be out of place in our society. No clear answer to the question will be available for a long while, and perhaps when the time comes to take stock of what has happened the variables will be confused beyond analysis. No one can define how infantile mortality has been halved more precisely than by saying people began to take notice of it and be ashamed; all sorts of people then did all sorts of things and fatalities soon fell, but it is impossible to measure the credit due to the bacteriologist in the laboratory against that we must give to the kindly woman in the infant welfare centre. We may surmise that there will be the same kind of difficulty when we come to measure food against healthiness. But looking at the young things of to-day it is difficult not to believe that their good food will do much to keep them well, at least in some respects. Bad feeding certainly encourages tuberculosis, though it has no clear relation to the influenza virus or the pneumococcus, and to call any vitamin "anti-infective" seems going rather far. What will happen with the degenerative diseases of middle life is quite unknown, and we have no idea whether being 2 in. taller and 7 lb. heavier on leaving school will fend off arterio-sclerosis 30 or 40 years later. However it would be really heart-breaking if we had to think that our nice looking young people are not really healthier than the generation before them.

* * *

This concentration of interest on children has also diverted attention from the far more important group of active experienced men and women between 30 and 50. How are they to feed themselves to get the best out of their brains and training? To say that children are the most important section of the community is sentimental twaddle of the worst kind. They need looking after because they cannot look after themselves, and they are convenient to look after because they can be coerced, but for the well-being of the world the health and liveliness of a man of 40 who has established himself as a good workman at his job is far more important than the state of many children. What are known as "great men" seem to have only one thing in common which is insatiable industry. And what more desirable aim could dietetics have than to enable the middle-aged man to work effectively for 10 hours a day instead of 7, and to avoid fading away towards the end of the afternoon? I do not recall anyone discussing this problem except Dr. Corry Mann, who tried drinking milk with his lunch. Could not the experiment be extended in, for example, Whitehall with some of the surplus milk of which apparently there will still be plenty when the children have had all they ought to? It really looks as if we need something to balance the innumerable organisations for encouraging and improving children—a Society for the Promotion of the Middle Aged or something of that kind.

* * *

Apart from the curious sexual cult of slimming, we hear little in this belly-minded age of the virtues of asceticism, and we are seldom reminded that gluttony was one of the seven deadly sins. Yet there must be something in it. "Up to 20 eat all you can get, from 20 to 40 eat as much as you can, over 40 as little as you can do with," and the mortification of the flesh has never lacked advocates among those who think more of intellectual and spiritual things than of being hearty and jolly, though one may suspect that "more people are killed by overeating than overdrinking" must have come from the bishop who said he would rather see England free than sober. How far it has been universal for saints to subdue the flesh to the spirit I do not know, but a great many of them have done it, in modern as well as ancient times. Unfortunately we know little about the personal habits of distinguished men, and their biographies are painfully reticent about such things; some of them have been plump but many have certainly been thin, and not a few of them small as well. What Mr. Gladstone ate for breakfast must surely be as important as what he said in 1881, and in all the charming intimacy of Darwin's "Life and Letters" there is no hint of what he actually did for his queasy stomach. Voluntary starvation for a short time is widely recognised by lay people as a good thing to do when they do not feel very well, and various systems of treatment, orthodox and quackish, have been based on starvation more or less concealed with tasty waters. A friend of mine who starved for a fortnight said that he reached a

state of mental clarity (subjective) and exaltation which he would never have thought possible, and it was only the sight of his face in a looking-glass which sent him in search of food. As the best short story in the world tells us, Saul fasted before he went to see the witch of Endor, and temporary abstinence has been recognised on an enormous scale in a variety of religious cults as a likely precedent to getting authentic tidings of invisible things; the consensus of opinion in its favour is overwhelming. It might be a good preparation for a difficult consultation or an important experiment. Of the bodily and mental effects of habitual austerity we know little. Mass experience in times of trouble or in certain social classes is always confused with other factors than diet; typhus would have no relation to famine if soap and hot water were to be had for nothing. And ascetic individuals who are healthy and productive may well represent the extreme of the normal variation in food requirement. But there does seem a little danger at the present time that the possible virtues of eating less are being overlooked; it is established beyond doubt that being too fat is one of the most dangerous diseases anyone can have.

CORRESPONDENCE

MANIPULATIVE SURGERY

To the Editor of THE LANCET

SIR,—As one who was present at the demonstration by Sir Herbert Barker at St. Thomas's Hospital on July 22nd, 1936, I was interested, but not surprised, to learn of the gratifying proportion of successes that resulted and which are recorded and analysed by Mr. Bristow in the last issue of THE LANCET. After the heated controversies of the past, it was a courteous gesture on the part of Sir Herbert Barker to give this interesting demonstration, and I yield to nobody in my appreciation of the pertinacity with which this able exponent of manipulative methods has fought for the recognition of this valuable and highly specialised method of treatment. The demonstration and its results have received wide publicity in the lay press, and may I, without appearing ungenerous, utter a plea for a more logical and unbiased attitude towards this important problem and one that does justice to those within the ranks of the medical profession who, quite independently and without any knowledge of Sir Herbert Barker's methods, although doubtless inspired to a certain extent by his advocacy, have striven to place this method of treatment upon a scientific basis?

The impression that the average layman is clearly intended to form from a perusal of many of the reports in the lay press is that the medical profession for a long period has known nothing and cared less about manipulative treatment and that, Sir Herbert Barker, having generously demonstrated his methods, we should now pursue an active policy and give our patients the benefits of these—i.e., Sir Herbert's—methods. There is a grave fallacy in this familiar argument, for are not the methods of medical pioneers in this sphere also worthy of consideration and study?

There must have been few present at the demonstration who did not learn something of real value, although some of the methods demonstrated have been practised and taught by orthopædic surgeons for years. The results confirm the view held by most of us that no permanent cure of a badly torn semilunar cartilage with recurrent displacement can be brought about by manipulation. The marked improvement brought about by manipulation in the cases of recurrent dislocation of the shoulder of long standing is a remarkable fact, quite new to most of us, and merits careful consideration. Speaking personally, I saw little to cause me to make any marked alterations in my own technique. I have little doubt that Sir Herbert Barker himself deprecates the verdict of some of the sections of the lay press that the work of the medical workers in this field is of such insignificant value that it can be ignored.

The pioneer work of the late Sir Robert Jones and of others in this field was also of inestimable value in convincing the medical profession of the value of manipulative methods, and there are others still in our midst who have not had the opportunity of seeing the technique of Sir Herbert Barker, but who have devoted much time and energy to the advancement of this branch of surgery, and who, like myself, have lectured and given demonstrations to doctors in all parts of the British Isles. Mr. Bristow in his concluding remarks states:

"From Barker's demonstration, certain excellent details in his technique will probably be followed. He taught the value of repeated manipulation; the value of traction; the personal supervision . . . afterwards; and above all . . . the splendid optimism which is essentially a part of treatment . . . in helping those with long-standing disabilities, whose confidence has been rudely shaken by failures of the earlier efforts at cure."

May I, in order to do justice to my colleagues and myself, parallel each of these main points by quotations from the first edition of my book on "Manipulative Surgery," published in 1925.

(1) *The value of repeated manipulation.*—"In difficult cases, it is a sound principle to stay one's hand, and be content with achieving the desired result by a carefully planned series of manipulations rather than to run the risk of exciting severe reaction and shock" (p. 30).

(2) The *value of traction* is duly emphasised in the sections of the book devoted to manipulation of individual joints. For instance, on p. 129, in manipulating the wrist, the advice is given that "During these movements, traction should as far as possible be exercised."

(3) *Personal supervision after manipulation.*—"Organisation and personal attention to the smallest detail are essential" (p. 30).

(4) *The importance of restoring the patient's confidence.*—"The importance of firm but kindly handling and of inspiring confidence and keen coöperation in the patient can hardly be over-estimated" (p. 30). "The medical man must never forget that . . . these persons . . . have previously consulted divers others; both qualified and unqualified, and that their whole faith is now pinned upon him. He must prove worthy of this trust . . . and by a judicious combination of tact, sympathy and determination, snatch victory often out of the jaws of failure" (p. 32).

This evidence is merely brought forward to show that the elements of Sir Herbert Barker's work which Mr. Bristow very wisely considers to be worthy of special note and emulation are among those independently taught and practised by some of his colleagues. Similar evidence can be obtained from the teaching of other orthopædic surgeons.

I am, Sir, yours faithfully,

A. G. TIMBRELL FISHER.

Montagu-square, W., Feb. 28th.

To the Editor of THE LANCET

SIR,—I have so often acknowledged my indebtedness to Sir Herbert Barker that I think I shall not be misunderstood if I criticise one of the cases which

he treated by manipulation at St. Thomas's Hospital on July 22nd, 1936. Case 1 was said to be a case of recurrent dislocation of the shoulder of 15 years' duration. The shoulder had "dislocated" hundreds of times, sometimes daily. It had never had to be reduced by a doctor.

I described the pathology of recurrent dislocation of the shoulder, I believe for the first time, in 1923 (*Brit. med. J.* **2**, 1132). The condition is due to a wide traumatic separation of the fibrocartilaginous glenoid ligament from the anterior margin of the glenoid cavity. The defect is permanent, because there is no tendency for the torn ligament to reattach itself to the bone. The head of the humerus is therefore free to leave the joint anteriorly on the slightest provocation. The anatomical condition is quite constant and can be seen and verified by any surgeon who cares to expose the anterior margin of the glenoid cavity in a genuine case of recurrent dislocation of the shoulder. It is then obvious that the only rational treatment is to reattach the glenoid ligament (or the capsule) to the bone from which it has been torn. This operation never fails.

With regard to Case 1 (above), I have yet to meet the man who could reduce a dislocation of his own shoulder-joint, and it would be interesting to know precisely what happened on the hundreds of occasions when this shoulder was alleged to have been dislocated. When Barker examined the man he said, "It is obvious that there is no large defect in the capsule in this case"—a statement which I would suggest is a contradiction of his diagnosis, since dislocation of the head of the humerus cannot occur without such a defect. In conversation I once asked Barker how he accounted for his success in view of what we know about the pathology of recurrent dislocation. He replied frankly that he did not know, but he could only suppose that his manipulation caused such a stirring up of the tissues that the dislocation was prevented. If this is the true explanation, it must surely be unique in Barker's experience (as in ours), for in no other region of the body is manipulation designed to produce *limitation* of movement; indeed it is difficult to see how it could do so. Moreover, nothing that Barker did to this man (Case 1) in our presence could possibly have produced such a violent reaction as is suggested by this explanation.

Recurrent dislocation of the shoulder-joint is not very common. I think it is quite clear that the condition which Barker calls "recurrent dislocation of the shoulder" is not the same as that which we call by that name. It is more than doubtful whether the man here referred to (Case 1) ever dislocated his shoulder. That he felt something "slip" in his shoulder joint I do not doubt, and that this "slipping" was due to adhesions or contracture in or about the posterior part of the capsule of the joint is more than likely. We are familiar with such cases, and incidentally we have treated them by manipulation, but we do not call them cases of recurrent dislocation of the shoulder. At the same time we must admit that recurrent dislocation of the shoulder has been apparently cured by the most irrational surgical procedures, and, if it can be cured by manipulation, we are only too willing to learn. But it is fair to demand that the diagnosis should be unequivocal, and it is not unreasonable to ask for an intelligible explanation.

I am, Sir, yours faithfully,

A. S. BLUNDELL BANKART.

London, W., March 1st.

PROTAMINE INSULIN (WITH ZINC)—SUSPENSION

To the Editor of THE LANCET

SIR,—The retarding action of protamine, with the addition of zinc, on insulin has been the subject of investigation for some time past. Protamine Insulin (with Zinc)—Suspension is now made available by the four firms associated with the manufacture of insulin in this country, Messrs. Allen & Hanburys Ltd., Boots Pure Drug Co. Ltd., The British Drug Houses Ltd. and Burroughs Wellcome & Co.

The preparation is a suspension of insulin, with added protamine and zinc, of such a character that it is readily and evenly diffused on shaking prior to administration. As it is more slowly absorbed than unmodified insulin it should be of particular use in cases where unmodified insulin does not provide adequate control or where several administrations daily are necessary. While extensive clinical trial has determined the issue of a satisfactory preparation, there is still much to be learned about its general use; therefore care will be necessary if reactions are to be avoided due to unfamiliarity with its use or deviations from a properly balanced dietary.

Protamine Insulin (with Zinc)—Suspension is issued, at present, in one potency (40 units per c.cm.). Two sizes are available: 5 c.cm. containing 200 units and 10 c.cm. containing 400 units. The packings will be distinct in colour from existing packings of unmodified insulin.

We are, Sir, yours faithfully,

ALLEN & HANBURYS LTD.,
BOOTS PURE DRUG CO. LTD.,
THE BRITISH DRUG HOUSES LTD.,
BURROUGHS WELLCOME & CO.

London, March 1st.

TREATMENT OF FRACTURE OF THE NECK OF THE FEMUR

To the Editor of THE LANCET

SIR,—Mr. Bailey seems to have missed the point of my previous letter. I contend that radiological control is *the* essential part of the technique of extra-articular nailing. Instruments to place the guide may be classified as luxuries.

The many advantages of this new surgical technique that can successfully replace a large exposure of the hip are obvious. I criticised Mr. Bailey's technique because he contended that his instrument replaced close radiological control. I remind Mr. Bailey that I agreed that skeletal traction *sometimes* reduces, with accuracy, a medial fracture of the femoral neck, but the large majority of these fractures are not so reduced. I contended that X rays were wanted first to control the manipulations necessary to obtain accurate reduction in this larger group, and next to confirm the accuracy of the reduction. Now, an instrument can place a guide wire with accuracy. In common with Mr. Bailey I use one that enables me to do this. Its advantages are a speeding-up of the operation and a decrease in the number of necessary radiograms, but I think that is all we can expect of it.

Recently Böhler and Felsenreich (who together have nailed nearly 200 necks) have shown me the complications that can occur during this operation, and I remain quite convinced that the steps of it need the closest "watching." With regard to the complication I instanced in my previous letter: I have watched the oncoming nail displace an accurately reduced head from its position on the neck on three

occasions in my small series of 28 radiologically controlled operations in spite of the guide wire being in the head fragment. I now transfix small head fragments to the pelvis with a stout guide wire and they are not displaced. This is but one example of planning to circumvent complications as they arise and are seen in the radiologically controlled operation. A Thomas ring around the upper thigh and the patient in bed gives the radiologist little help in his important work, for the films must be of the clearest definition if they are to be of value.

The success of this operation will be judged on its end-results, and I believe the end-results will justify the "ordeal" of an operation on an orthopædic table under close radiological control.

I am, Sir, yours faithfully,

WILLIAM GISSANE.

St. James' Hospital, S.W., Feb. 28th.

OXYGEN ADMINISTRATION

To the Editor of THE LANCET

SIR,—Recently a box-mask was introduced for cheap and efficient administration of oxygen. The mask described previously was for adults (14 years or older). Inquiries having been made as to the application of the mask to younger patients, details are given in the Table below for the correct dimensions of the mask for various ages, and also the approximate rates for flow of oxygen for ordinary

Dimensions of Mask and Rates of Oxygen Flow for Various Ages

Age.	Weight in kg.	Tidal air (c.cm.).	Dimensions of mask (cm.).				Rate of oxygen flow, litres per minute.
			Length.	Breadth.	Depth.	Volume.	
0– 6 months	3·77	48	6	5	3·5	105	0·7–1
6–12 ,,	7·7–12	85–129	8	6	4	192	1–2
3– 7 years .	14·3–19	124–221	12	9	4	432	2–3
8–14 ,, .	22–29	221–395	13	10	5	650	3–4
14 years and over (adult)	60–70	440–550	15	12	7	1260	5–6

conditions of pneumonic anoxæmia. Higher rates may be tried if necessary. These rates have been worked out from the tidal air for various ages. The mask may be cut from a suitable light cardboard box and a light rubber tube (internal diameter 5 mm.) in about 10 minutes, following closely the details given in the previous publications (*Brit. med. J.* 1936, **1**, 1245, and *Lancet*, 1937, **1**, 82).

The efficiency of the mask depends on the inlet tube being turned back on itself and placed in the correct position inside the mask so that the incoming oxygen strikes the middle of the top of the inside of the mask. The opening at the back of the mask to accommodate the nose, mouth, and part of the chin must be cut to suit the size of the face of the patient. The mask must be connected with a "Bobbin" flow meter and automatic regulator for the oxygen cylinder as shown in the previous papers mentioned above.

The masks may be made also from aluminium or from a wire frame and a linen or silk covering (makers: Siebe Gorman and Co., London, S.E.1).

I am, Sir, yours faithfully,

London, N.W., Feb. 25th. J. ARGYLL CAMPBELL.

BASOPHIL PITUITARY CARCINOMA

To the Editor of THE LANCET

SIR,—In the annotation in your issue of Feb. 20th upon our case of Cushing's syndrome associated with a basophil carcinoma of the anterior lobe of the pituitary, you refer to Crooke's work upon the hyaline change in the cells of the gland in this syndrome, a change which he holds to be characteristic of the condition, whether associated with pituitary, adrenal, or thymic tumour. You justly state that our failure to find such change in the malignant cells of the pituitary neoplasm is in no way a refutation of Crooke's views. Since the publication of our article in *Brain* we have satisfied ourselves—and we would gratefully acknowledge our thanks to Dr. Crooke who has examined some of our material and allowed us access to certain of his preparations—that the surviving basophil cells of the pituitary gland itself which were present in the pars intermedia do, in fact, show the hyalinisation which he has described.

We are, Sir yours faithfully,

HENRY COHEN,
J. HENRY DIBLE.

The University, Liverpool, Feb. 24th.

ARTIFICIAL PNEUMOTHORAX ON STATISTICAL TRIAL

To the Editor of THE LANCET

SIR,—I should like to support Dr. Andrew Morland's admirable comments in your issue of Feb. 20th on the result of the recent statistical inquiry into artificial pneumothorax treatment in England. Should another statistical investigation be made in a few years' time, I believe the outcome will be very definitely in favour of artificial pneumothorax. Among factors likely to influence favourably such figures are:—

(1) The greater tendency to adopt the treatment in earlier cases.

(2) The more frequent use of thoracoscopy for the division of adhesions.

(3) Paralysis of the diaphragm towards the termination of pneumothorax treatment in selected cases.

(4) Though possibly to a smaller extent, the less conservative attitude to the adoption of bilateral artificial pneumothorax in a larger number of suitable patients.

(5) Indirectly, an improvement in radiological equipment permitting of a more accurate control.

I am, Sir, yours faithfully,

Montana, Switzerland, Feb. 27th. HILARY ROCHE.

HORMONE TREATMENT OF UNDESCENDED TESTIS

To the Editor of THE LANCET

SIR,—The article by Mr. Mimpriss in your last issue raises some important points in regard to the use of gonadotropic hormones in cases of undescended testes. His experience leads him to believe that there are contra-indications to this treatment and many would agree with him here. He now brings forward a new indication for treatment, "bilateral cases with subnormal genital development." He records this subnormal state in 9 of his 20 cases with ages from six to thirteen years—although we could exclude case No. 8 on the ground that micro-genitalia is a normal feature of the Fröhlich type and is corrected later. If we are to adopt this new indication it will be necessary for us to have a very clear idea as to the normal size of the genitals at different ages. Have we adequate knowledge of this matter? I doubt it, and remarked on the variable

size of these organs in normal boys in your columns (1936, **2**, 929). I would say in fact that the size of the genitals is one of the most variable features in boys up to full puberty, and would urge that this new indication be not yet adopted as a satisfactory one.

I am, Sir, yours faithfully,

Harley-street, W., Feb. 28th. PEARSE WILLIAMS.

To the Editor of THE LANCET

SIR,—Mr. Mimpriss was, we feel, unlucky in inducing descent in only 6 of his 20 cases; and perhaps if he had had better results he would be less seriously impressed with the genital hypertrophy which occurred in 19 of them. This complication has been encountered by most of those who have used this form of treatment. In our own series of 29 cases successful descent was achieved in 23, and genital hypertrophy was noted in 15 out of 26; but the enlargement of the testes was always one of our objects, and the enlargement of the penis has never struck us as being so undesirable as to cause us to abandon the treatment as Mr. Mimpriss did. Nor do we agree with him that hormone therapy should be confined to bilateral cases with subnormal genital development only; for we have found it frequently successful in cases of unilateral failure in descent, sometimes associated with apparently normal genital development.

We suggest that the points to be considered in connexion with this form of treatment are:—

(1) *The optimum age at which treatment should be instituted.*—Spermatogenesis normally begins at the age of 9 and and the longer it is delayed as the result of the ectopic position of the testis the less likely it is to occur should this position be subsequently corrected. This is our answer to the statement that 90 per cent. of testes descend spontaneously by the age of 16, and that therefore no treatment should be instituted before that age. Treatment before the age of 9 may lead to undesirable complications, such as the onset of precocious puberty and the premature awakening of the sexual appetite.

(2) *The selection of cases for hormone therapy.*—It has been repeatedly pointed out that in cases in which there is some mechanical barrier to normal descent, such as an overlying scar of a previous unsuccessful operation for orchidopexy, hormone therapy is very unlikely to be effective. Furthermore, as Spence and Scowen [1] have said, failure is probable if the testis is in the abdominal cavity and does not engage at the internal inguinal ring. The inevitability of future surgical interference, as in those cases associated with a hernia, might conceivably be regarded as a contra-indication to hormone therapy on the ground that the ectopic testis can be dealt with at the same time as the repair of the hernia. It is, however, a fact that gonadotropic influences may increase the mobility, if not actually lower the position, of the canal-dwelling testis, and thereby render orchidopexy less reminiscent of a tug-of-war. Furthermore, as pointed out by McLellan,[2] who advocates both pre and post-operative treatment, the testis transferred to the scrotum by orchidopexy may fail to develop in its new surroundings unless encouraged to do so by hormone administration.

(3) *The possibility of permanent functional damage to the testis by the use of gonadotropic hormones.*—This is referred to by Mr. Mimpriss in his paper and darkly hinted at by Cabot.[3] The facts are these: as the result of continuous administration of gonadotropic extracts, antigonadotropic factors are elaborated in the patient's blood stream which may, if allowed to circulate for a sufficient period, affect the testis adversely but only temporarily. As soon as these antigonadotropic substances disappear, as they do when gonadotropic administration is discontinued, the testis rapidly recovers its functional activity. In order to avoid this complication treatment should be administered (as Spence and Scowen recommend) in a series of courses separated by intervals of a month or so during which no injections are given.

In our opinion no serious contra-indication to gonadotropic therapy in undescended testes has yet been brought to light, and we believe that no *harm* can be done if it is applied to any type of case. If, however, one is aiming, as one should be, at a high proportion of successful results, a careful selection of cases should be undertaken on the lines outlined above.—We are, Sir, yours faithfully,

P. M. F. BISHOP,
A. C. HAMPSON.

Endocrine Clinic, Guy's Hospital, S.E.

[1] Spence, A. W., and Scowen, E. F. (1935) *Lancet*, **2**, 1335.
[2] McLellan, E. (1936) *Ibid*, **1**, 999.
[3] Cabot, H. (1936) *St Thom. Hosp. Gaz.* **35**, 512.

UNIVERSITY OF LONDON MEDICAL GRADUATES SOCIETY

To the Editor of THE LANCET

SIR,—The University of London and its graduates are entering into a new heritage as their great building rises in Bloomsbury, for it will create a centre of university life such as London has long desired. The future however will be made by man and not by stones, for the traditional spirit of great centres of learning is created by the men who move in them. Our university has yet to develop its traditions in the fullest sense, for hitherto the graduates have had few associations with their university except as an examining body, and among the medical graduates the loyalties of professional life are given chiefly to their own medical schools. This has led, in the past, to a narrowing of outlook, and has been a hindrance to progress. Lister was a London surgeon, yet London was almost the last of the great centres of medical work to acknowledge the truth of his teaching. He himself attributed this to the lack of a university and of the university spirit, which, valuing the search for truth above all else, subordinates to it all considerations of personal advantage.

London can never enjoy a university life as intimate as that which exists in smaller towns, but, with the coöperation of its graduates, it has now an opportunity of developing a university spirit and tradition along its own lines.

Nine years ago, the University of London Medical Graduates Society was formed to provide a social meeting-ground and bring all graduates of the medical faculty of the University into touch with one another. The University has recently granted official recognition to the Society, and the annual dinner on May 6th next will be held for the first time in the university banqueting hall. The vice-chancellor has signified his intention of attending the dinner, and it is hoped that the occasion will arouse the interest of medical graduates in their university and that many who are not yet members will join. Overseas graduates, who may be in London for the Coronation celebrations, will be specially welcome. Guests, medical or non-medical, may be invited by members.

The objects of the Society are, in brief: (*a*) to bring medical graduates of the University of London into closer relationship with their university and with one another; (*b*) to keep in touch with "overseas" medical graduates of the University; and (*c*) to promote the interests of the university and its medical graduates. The Society has no political activities. There is an annual dinner in London during May, and dinners are held in other centres from time to time, whilst an afternoon reception and

visits to places of interest take place during the spring.

The subscription is one pound for life, and applications for membership are invited and welcomed.

The address for all communications is 11, Chandos-street, London, W.1.

We are, Sir, yours faithfully,

DOROTHY C. HARE,
President.
PHILIP H. MITCHINER,
Hon. Treasurer.
LOUISE LIVINGSTONE, JOHN P. HOSFORD,
Hon. Secretaries.
VICTOR BONNEY,
Hon. Secretary for Overseas Members.

Feb. 15th.

OXYGEN TENTS

To the Editor of THE LANCET

SIR,—A statement appeared in the *Times* of March 2nd in connexion with a private venture ambitiously styled the National Oxygen Tent Service. The statement is made that the formation of the service was "in furtherance of a movement initiated by the British Red Cross Society." Work in this country on the oxygen tent was being carried out, and an oxygen tent service was in existence, long before the Red Cross made tents for the twelve hospitals; and they did so as the result of a letter signed by physicians and surgeons on the staffs of those hospitals asking for their help. Hence the Red Cross did not initiate any movement; moreover they decided they would not themselves undertake an oxygen tent hire service and I am informed that they are not sponsoring this particular venture.

As for the so-called "open top" tent itself, we are still awaiting published results in this country. I doubt whether in general it would be as effective as Dr. Argyll Campbell's much simpler face mask.

I am, Sir, yours faithfully,

London, W., March 2nd. E. P. POULTON.

MENTAL DISORDER AND ENDOCRINE ACTIVITIES

To the Editor of THE LANCET

SIR,—With reference to the leading article on this subject in your last issue, may I suggest that the most important contribution of endocrinology to psychiatry will prove to be in the field of psychodynamics. It is now generally recognised that our mental energy is derived from instinctive tendencies or drives, and since we share many of these instincts with the lower animals their endocrine relationships should be susceptible to investigation by means of laboratory experiment. This particularly applies to Freud's libido, which plays such a prominent part in modern psychopathology. Recent discoveries in endocrinology have thrown a flood of light on the physiology of sex, and it should not be difficult to apply this knowledge with a view to elucidating the glandular factors which contribute towards sex drive. Biochemists are naturally preoccupied in investigating the action of the various hormones on bodily processes, and the claims of psychiatry are liable to be overlooked. Experiments dealing with the organic basis of libido could be performed most profitably by those who have had a psychological training, but I know from personal experience that it is practically impossible for a man who is working in a mental hospital to obtain financial aid for research of this nature. Nevertheless, the work should be done by someone.—I am, Sir, yours faithfully,

THOMAS D. POWER.

Brentwood Mental Hospital, Essex, March 2nd.

RITUAL PURGATION

To the Editor of THE LANCET

SIR,—May I suggest that there are two sections of the community who should be protected from the devotees of these rites?

(1) Inmates of nursing-homes are given large doses of castor oil, often on the orders of a nurse, regardless of any protest on their part that it either upsets them or that the bowels have already acted that day.

(2) Thousands of young children are submitted to the same ritual every Saturday night ("whether they need it or not"), with the result that Sunday is spent by them in working it off.

Is it advisable to add oleum ricini to the list of dangerous drugs?—I am, Sir, yours faithfully,

STELLA CHURCHILL.

Cumberland-terrace, N.W., March 1st.

To the Editor of THE LANCET

SIR,—If the administration of a purgative be one cause of disturbed bowel habit, may I suggest another cause? I refer to the time-honoured system of giving hospital patients their breakfast at 5.30 or 6 A.M. The after-breakfast call comes not at an established hour of the morning, but at a variable number of minutes after the first cup of tea. Unfortunately at such a time the night nurse is to be seen distractedly rushing round clearing away trays, making beds, taking temperatures, writing up "report," &c., and it is a brave, and heartless, patient who has the courage to call for a bed-pan. This may be moral cowardice, or it may be noble sufferance, but it happens. Nor may the patient be relieved at 8 A.M. when the day staff come on (if indeed he has any urge left by this time) for the first half-hour or so is taken up by the ceremony of "report."

The remedy is simple. Let the last duty of the night nurse be the giving of breakfasts at 7.30 A.M., and the first duty of the day nurses be the distribution of bed-pans at 8 A.M. There seems to be the choice between the rhythm of hospital routine and the rhythm of the sphincters.

I am, Sir, yours faithfully,

Feb. 28th. STUDENT.

TREATMENT OF STREPTOCOCCAL INFECTIONS

To the Editor of THE LANCET

SIR,—In your last issue appears a note, on a case of streptococcal septicæmia treated with Prontosil, which calls for comment. (1) The patient, a boy of seven, had a leucocyte count of 23,200—i.e., was establishing a resistance. (2) He was given in all 60 c.cm. of antiscarlatinal or antistreptococcal serum. (3) After exploration of his gland swelling he became septicæmic. Anxious and bitter experience in the treatment of infections by the hæmolytic streptococci has taught me, and many others, that everything should be done to raise resistance by open-air treatment, by the use of abundant fluids (particularly those of high protein content), and by early administration of antiscarlatinal serum, preferably by the intravenous route. Surgical attack on an inflammatory focus before obvious suppuration has localised and is pointing merely precipitates the invasion of the blood stream. Whether the discomfort and alimentary disturbance associated with the daily administration of large quantities of antiseptic drugs is rewarded by cure in desperate cases is still open to argument.—I am, Sir, yours faithfully,

Sherborne, March 1st. J. WHITTINGDALE.

PANEL AND CONTRACT PRACTICE

The Drug Bill

LANCASHIRE is well known as a "peak" area in respect of the increasing cost of providing medicines for the insured population. The report of the panel committee following investigation of the prescribing of a Lancashire doctor for the first quarter of 1936 shows a total cost of £157 9*s.* as against an average for the same number of persons in the area of £106 0*s.* 4*d.* The difference of over £50 was attributed mostly to the number of prescriptions but partly to the high cost of ingredients.

Dr. X had prescribed during the quarter for 42·89 per cent. of his total list as against an average percentage, based on figures for three years on a large sample of cases, of 37·12 per cent. He had issued 4·821 prescriptions per person prescribed for, as compared with a calculated expectancy of 3·71. The relevant figures from four local comparable practices were 37·44 per cent. and 3·902 prescriptions. As to the cost, the average proportion of prescriptions in England ordering proprietary preparations is just over 1 per cent., costing 4·5 per cent. of the whole. Dr. X's proprietaries averaged 5·8 per cent., and their cost 19·4 per cent. of his total prescription cost. Dr. X was unable to offer an explanation with regard to his number of prescriptions. He did not practise in a particularly poor district where there was an unusual amount of unemployment; he maintained that all the patients prescribed for needed attention, and that no unnecessary prescriptions had been issued.

The panel committee found some difficulty in estimating the amount of excess, owing to lack of precise evidence. The total cost of proprietaries was £14 2*s.* 5*d.*, and while it was agreed that often there was no actual equivalent, it was submitted that other formulæ could be used with a similar therapeutic effect. About £5 might have been saved by the use of non-proprietary articles. Greater difficulty was experienced in estimating the excess due to "undue frequency," but the fact that many scripts contained two or more prescriptions (3367 scripts=4233 prescriptions) was held to have some bearing on the matter.

The panel committee considered that in a list of over 2000 most consultations would probably be in respect of slight ailments, for which the appropriate remedy would cost little. Few of the samples of the scripts examined were found to cost less than the average cost of a prescription issued in the area. Very little use appeared to have been made of the National Formulary.

The insurance committee decided, subject to there being no appeal by the practitioner, to make representations for the withholding of £40, which was the amount suggested by the panel committee as the minimum imposed on the Drug Fund in excess of what was reasonably necessary.

A Satisfactory Compromise

The medical service subcommittee is often reviled, and it is well to record a hearing with an ultimate result satisfactory to both parties. An insured person was taken ill while on a visit at an address outside the area of the practice of his insurance practitioner. The relatives did not know he was an insured person and called in a local practitioner, who gave the patient the option of treatment in hospital or in a nursing-home. The patient chose the nursing-home and was treated there by the practitioner. At some time during his stay the patient asked the practitioner whether he was "on the panel," but did not say he was insured nor asked to be treated as an insured person. Private certificates were issued, and in due course an account amounting to £11 16*s.* was rendered. The insured person told the subcommittee that he was under the impression that the fees for the nursing-home were inclusive of medical attendance, and he felt that the account rendered by the practitioner was somewhat excessive. The practitioner said that he was under the impression throughout that he was treating a private patient, and added that if the patient had told him that he found difficulty in paying his account he would have been prepared to adjust it. The practitioner voluntarily offered in the circumstances to accept £4 in settlement of his account, and this was willingly paid. The subcommittee in their report note their view that the practitioner made a generous offer, and their satisfaction that the question had been adjusted amicably without any recommendation from them.

"Outside the Scope"

Among the (round) 2000 practitioners on the London panel only 22 charged, or contemplated charging, insured persons fees during the year 1936 for treatment outside the scope of medical benefit, but rendered by them owing to their special experience in that class of work. The number of cases notified was 110 and in every case the relevant committees agreed that the practitioners concerned were possessed of the necessary skill and experience to enable them adequately to carry out such services. Sixty-two cases referred to ophthalmic services—but it should be remembered that notifications are required only when the practitioner renders such a service for one of his own insured patients—24 related to treatment by ultra-violet rays, 4 were psychotherapy for anxiety neurosis. Most of the remaining 20 were in respect of surgical services, 1 was an X ray for suspected Pott's fracture, and 1 was the administration of an anæsthetic for tonsillectomy by dissection. When the operation is outside the contract and is performed by a second doctor, the anæsthetic being given by the insured person's own doctor, no fee is chargeable either to the practitioners' fund or to the patient—unless, as in this case, the giving of the anæsthetic is itself a specialist service.

LINCOLN COUNTY HOSPITAL.—This hospital received the record income of £23,953 last year, an increase of over £2000 on the previous year. The extensions fund now stands at £50,500 and the overdraft is reduced to £5500.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—A week-end course in urology will be given at the All Saints' Hospital on March 20th and 21st.

The following courses are available for M.R.C.P. candidates: heart and lung diseases at the Royal Chest Hospital (on Mondays, Wednesdays, and Fridays, March 1st to 19th); neurology, West End Hospital for Nervous Diseases (afternoons, March 8th to 19th). A demonstration on pulmonary tuberculosis will be held at Preston Hall on April 3rd. A mock trial of a motorist accused of being under the influence of alcohol will be held on Thursday, March 11th, at 8.30 P.M. Admission will be by ticket only. Full details of the trial, and of all courses, can be had from the secretary of the fellowship, 1, Wimpole-street, W.

OBITUARY

SIR HENRY JACKSON, Bt., M.B. Edin., B.Sc. Lond.

As was announced briefly last week, Sir Henry Jackson, the well-known authority on transport and traffic questions, died suddenly on Feb. 24th. He collapsed at the dinner of the Wandsworth branch of the London Association of Local Government Officers, and died immediately at the Bolingbroke Hospital, to which he was taken after the seizure.

Henry Jackson was born at Heywood, Lancashire, in 1875. He received his education at the Bury grammar school and proceeded to Cambridge, where he obtained a first class in the natural sciences tripos in both the first and second parts, in the interval taking the degree of B.Sc. at the University of London. He was elected a fellow of Downing College, Cambridge, where he was a science lecturer, and was for ten years tutor. While at Cambridge he became a Fellow of the Cambridge Philosophical Society, and contributed papers also to the Royal Society and the Chemical Society. At this point he relinquished his academic career in response to a call to play a fuller part in social activities. He graduated as M.B., Ch.B. in the University of Edinburgh and went into general practice in Putney, where he soon became a marked man both for professional capacity and his interest in municipal affairs. During the war he served in the R.A.M.C. with the rank of major, and at the conclusion of hostilities returned to his medical practice. In 1921 he was elected Mayor of Wandsworth. He held this municipal post for three years, and in 1924 was elected Member of Parliament for Wandsworth. He sat as a conservative, but with the greatest interest in the welfare of those whose position submitted them to a life of struggles. He held the seat for five years, losing it in 1929 when his defeat at the poll caused some surprise; but he regained the seat two years later, his popular claims being unexceptionable. In 1935 he was re-elected and was representing the borough at the time of his death. By this time he had established a high position in the House, as a committee man, and as one to whom municipal life, and especially the increasing difficulties presented in the conduct of urban traffic, made a particular appeal. Throughout all the latter part of his parliamentary career he was recognised as an authority on traffic problems, the subject upon which most of his contributions to debate were directed. He was appointed chairman of the London and Home Counties Traffic Advisory Committee and became chairman of the special subcommittee which considered the question of the new bridge at Charing Cross. The subcommittee was formed at the instance of the Ministry of Transport, and Jackson's selection to preside over its counsels was approved by all his colleagues in the House.

[Photograph by Elliott & Fry

SIR HENRY JACKSON

He was never regarded as a party man, although he was chairman of the Conservative London Members Committee, nor as a medical man, although he presided over the Medical Committee of the House. His medical knowledge was displayed by the part which he played in debates affecting many sides of the municipal life and the status of municipal officials; and the practical dealing with questions where public health and official administration came into contact made a close appeal to him. Before his other duties became so pressing he was an active member of the London Voluntary Hospitals Committee and sometimes occupied the chair at its meetings.

Through his many relationships in public life, in his parliamentary constituency and within the House of Commons, Jackson established a fine reputation as a man of affairs. He was sound, industrious, and kind, and was assisted in all the work which he undertook by his bluff and equable personality. His death, when there might well have been expected for him a considerable extension of time in which to see the fruits of his labours, is a source of wide grief to a large circle of fellow workers and friends.

He married in 1904 Edith Margaret Smalley, of Norton Grange, Castleton, Lincs, who survives him, but there were no children of the marriage. He was knighted in 1924, the year in which he commenced his Parliamentary career, and was created a Baronet in 1935. He was 61 years of age.

THOMAS MARTIN CORKER, C.B., M.D. R.U.I.

THE death occurred in London at the age of 80 on Feb. 24th of Major-General Thomas Martin Corker, a distinguished member of the R.A.M.C. He was born in Co. Cork, the son of the late T. W. Corker. He studied medicine for four years at Queen's College, Cork, where he was a gold medallist and senior scholar, taking degrees in science with first-class honours and distinguishing himself as an athlete. He then turned to medicine and entered St. Bartholomew's, where he again established himself in the forefront of both scholastic and athletic worlds. To quote his own words "while working at Bart.'s I was still applying for divers chairs—in natural history, geology, botany." For these he obtained excellent testimonials from his teachers, but having graduated M.D. at Queen's College, Cork, in 1879, he joined the R.A.M.C., which he served for 38 years, the greater part being spent in the East. He was on the North-West Frontier, in the Khyber Pass, in 1880–81 and again during the serious outbreaks of 1897–98 against the Mohmands and, in the Tirah campaign, against the Afridis. In the latter he took part in the battles for the passes of Sampagha and Arhanga, and in the four days' march in intense cold down the Bara valley, the worst part of the campaign. For this he was mentioned in dispatches and received two clasps for his medal. Promoted a colonel in 1905 he became principal medical officer successively to the commands in Scotland, Egypt, and Cape Colony. He returned to India in 1911 on becoming a surgeon-general, and was D.D.M.S. first of the Lucknow division and subsequently of those in Poona and in Secunderabad. He was honorary physician to the King from 1912 to 1918. He made his mark during the years of the late war,

where he did administrative work of great responsibility, and for his services he was created C.B. and a Knight of St. John of Jerusalem. He retired in 1918, and two years later his university honoured him with the degree of LL.D.

Major-General Corker had a ready pen which he used to the best advantage both in respect of his military work and in more popular spheres. For example, he published articles in *The Cricketer*, and three years ago reminiscences of his student days in the *St. Bartholomew's Hospital Journal*. In the daily press he occasionally wrote vigorously on political matters, and particularly about the recent changes in India. Latterly he was often to be seen at his old hospital where he showed great interest both in present problems of medical education and in the students' activities. He will be remembered for his reliability—the key to the success of his career—and for his effervescent good humour.

General Corker leaves a widow, Florence, the daughter of J. E. Leslie of Passage West, Co. Cork.

FREDERICK RANSOM, M.D. Edin.

Dr. F. P. F. Ransom, who died on Feb. 23rd at the age of 87, qualified M.R.C.S. Eng. in 1871 and became M.D. Edin. in 1875. His chief interest was pharmacology and it was this subject he studied abroad in Berlin and then in Halle and Marburg, working for a period as assistant to von Behring and Hans Meyer. In 1910 Dr. Ransom was elected to a Beit fellowship, and worked at Cambridge, with W. E. Dixon, on the action of caffeine and theobromine. From 1912 to 1924 he held a readership and subsequently a chair in the University of London at the London (R.F.H.) School of Medicine for Women, where he established the department of pharmacology. He was one of the earliest teachers to recognise the importance of providing a course of experimental instruction for students, and he thus succeeded in stimulating their interest in a subject which had till then been studied in a rather perfunctory way. His personal work was largely concerned with tetanus and diphtheritic paralysis, and with the mechanism of immunity. He was a wide reader as well as an enthusiastic research worker. His knowledge was readily placed at the disposal of colleagues and students, and he spared neither time nor energy in their service. All those who have ever worked with or under him will remember with gratitude his helpfulness and his kindly, modest, and courteous personality.

Dr. Ransom's last years were spent in retirement in the country he loved, where in spite of failing eyesight, he followed with keen interest the trend of modern pharmacological research.

ALEXANDER MANUEL, M.B., B.S., M.R.C.P. Lond.

Dr. Alexander Manuel, who died suddenly in Mexico City on Feb. 22nd, was not often seen in London of late years, but his death will be a source of grief to many friends. Of Greek extraction, he was a son of the late Mr. M. B. Manuel, of Marlborough Gate, Hyde Park, was born in 1878, and educated at Winchester and St. George's Hospital. He obtained the English double diplomas in 1905; in 1907 he proceeded to the M.B., B.S. Lond., and in the following year took the M.R.C.P. Lond. After qualification he worked at the Victoria Hospital for Children before becoming house physician at St. George's. He was elected physician to the French Hospital and to the Hampstead General Hospital, as well as to the Victoria Hospital for Children. During the war he served overseas, but his health broke down and he was never able to return to London practice. After the war he lived abroad, and practised during the season in Bordighera, where he had a lovely villa, and at Monte Carlo.

We owe the following note to a personal friend of long standing, a fellow Wykehamist.

"At the start of his career Alec Manuel was possessed of ample private means; it was not necessary for him to work for his living, and it speaks for his strength of character and interest in his profession that he should have devoted as much time to hospital work as he did.

"Always most generous in disposition, of late years, in spite of financial losses, he remained the same cheery soul that he always had been. He had travelled much, was full of interesting information, and was a most versatile man, and in student days was a great chess player. I knew him from school days, and when last I met him he was full of reminiscences; I shall always remember his joyous chuckle as he recounted some difference of opinion he had with his form master over a point in the Iliad, and the next moment spoke of his experiences with the ground-ash at the hands of a prefect." R. R. J.

NOEL CHARLES BEAUMONT, M.R.C.S. Eng.

Dr. N. C. Beaumont, who died on Feb. 21st at his house in Stainland, near Halifax, had been district medical officer for Stainland for over a quarter of a century. He received his medical education at St. Bartholomew's Hospital and took the English double qualifications in 1901. He held resident appointments as surgeon and anæsthetist at the Royal Bournemouth Hospital, after which he proceeded to Port Moresby, Papua, as chief government medical officer. On return to England he went into practice in Stainland and was appointed medical officer to the local authority. As general practitioner and as official he did excellent work supporting the social organisations of the community, while he showed particular interest in questions of industrial medicine as they arose in the neighbouring factories. He was 63 years of age at the time of his death.

JOHN HOMER MILLER, M.B., Ch.B. Glasg.

THE death is announced at the age of 42 of Dr. John Homer Miller who had a fine war record. Born at Craigwen, Pontypridd, he received his medical education at Cardiff and the University of Glasgow. Previous to qualification he joined as a private the Cameron Highlanders, and received a commission in the Manchester Regiment while serving in France; he was awarded the M.C. with bar and also obtained the Italian medal for valour. At the close of hostilities he entered the University of Glasgow as a medical student and graduated as M.B., Ch.B. in 1922. He then acted as medical officer to the Anglo-Persian Oil Company, and was absent from this country in Persia for three years. On his return he was attached to the staff at Glanely Hospital, and at the time of his death was senior resident medical officer at the Heathfield Hospital, Ayr, where he was in charge of the tuberculosis wards.

PARLIAMENTARY INTELLIGENCE

EXCHEQUER GRANTS AND LOCAL HEALTH SERVICES

IN the House of Commons on Feb. 24th Sir KINGSLEY WOOD, Minister of Health, moved the second reading of the Local Government (Financial Provisions) Bill. He said that this was the first time that the House had been enabled to consider the grants made under the Local Government Act of 1929. It had been a successful measure, whose repeal no party in the State would advocate to-day, for none wished to revert to the old percentage system, which had been illogical and often unjust. The block grant with its famous and ingenious formula took account of the principal factors which governed the need of a locality and through the 1929 Act local authorities had been given much greater freedom in their administration. Since 1929 the services of local authorities had reached a much higher standard. There had been, for instance, a great development in rural sewerage and water schemes, and the total expenditure on maternity and child welfare in England and Wales had risen by no less than 25 per cent. in the period 1929–35, and on all services by 9 per cent. Already in a considerable number of areas the Exchequer met 55–65 per cent. of the local expenditure, and in the whole country 44·6 per cent. But Exchequer subsidies could not go beyond a certain limit without the imposition of some direct control, thus sapping the local government institutions, and in some areas ending them altogether.

Since 1929, however, there had been considerable movements of population, a decline in the birth-rate, a quinquennial revaluation, a revival of industry in many areas, and continued depression in others. After long and close discussion with the authorities, therefore, the proposals in this Bill had been framed. Summing up its ten main proposals, Sir Kingsley Wood said that the Bill provided for the following: (1) an increase in the general Exchequer contribution to local authorities of £2,250,000 more than at present; (2) a minimum proportion in the future of 22½ per cent.; (3) a further relief to local authorities by wiping out expenditure amounting to £2,750,000; (4) a modification of the formula, so that grants should be allocated with particular help to those areas that needed it most; (5) a favourable basis for the local authorities in calculating "weighted population" for estimating the additional Exchequer grants; (6) a mitigation of the effect of the fall in this weighted population by increasing the cost of the grants to the Exchequer by another £150,000; and this would also be effected without reducing standard sums on account of the merging of the unemployment contributions, producing another £150,000 for the local authorities; (7) a revised provision for the prospective losses of special and parish rates, so that county councils might be enabled to make further contributions; (8) a further provision, partly at the cost of the Exchequer to meet cases of difficulty among separately rated losing areas; (9) provision for London so that further relief might be given to the poorer boroughs; and (10) a complete investigation of the working of the new formula and of internal distribution, in good time before the whole of the block grant had been distributed on the basis of the formula alone.

Mr. ARTHUR GREENWOOD said that he did not believe the revised formula would work more justly than its predecessor. The real trouble of the local authorities was the restriction of their resources. The poorer they were the heavier was the rate burden for a given standard of service; but it was just in these poorer towns that the social services were most needed, and he went on to quote statistics from the distressed areas showing the small proportion of children in these areas that received free milk or meals. He asked the Minister of Health to review the state of local authorities in the light of modern conditions, and consider whether there were not certain services which ought now to be made national or regional responsibilities. Secondly, the whole basis of the financial relations between the State and the local authorities ought to be reviewed, with a new partnership between the two, the State taking a more active part in assisting local authorities to recovery. While so far as this Bill went he would say "for this relief much thanks," he contended that it held no solution for the great problem with which they were faced.

Mr. KINGSLEY GRIFFITHS said he thought that the formula of the Act of 1929 had stood the test of time, and that this revision was another honest effort to meet the addtional necessities that had arisen since that year. He therefore gave it a very hearty welcome, within its limited scope.

After further debate, Sir FRANCIS FREMANTLE said that he thought the passing of the Local Government Act of 1929 had been a tremendous step in advance. To test the first seven years' experience of the system he took the figures for infant and child mortality which were to be regarded as a good index of public health work. In 1922 deaths among infants per 1000 births numbered 77; in 1929 they had come down only to 74; but in the last seven years they had been reduced to 57, and there was a similar record of progress all along the line. For this improvement he held responsible the removing of the percentage grants and the provision of block grants, together with the other parts of the 1929 Act. He congratulated the Minister on having brought in a very difficult and unpopular Bill, but one that was nevertheless of great value in promoting public well-being.

Mr. R. S. HUDSON, Parliamentary Secretary to the Ministry of Health, replying to the debate, said that one of the main reasons why the Government had abandoned the percentage grant system was that it gave far more to the rich areas that could afford to spend money than to the poorer areas which could not afford to spend money. It was because the Government recognised that the poorer towns with low rateable value needed more services, and were less able to pay for them by themselves, that they devised this formula which provided weighting for the poorer towns with lower rateable value and higher unemployment. The figures given by the Minister of Health recently in the House about the maternity services completely disproved the statement, which was made when the Act of 1929 was going through the House, that the social services would tend to be starved because the local authorities would not have any money to pay for progressive increases. Figures from South Wales, for example, had shown a substantial increase in the expenditure on maternity services, and there was no evidence of starvation there. If certain local authorities had not provided enough meals to an adequate number of schoolchildren the answer to that was that they could have done so if they had wanted to. Whatever might have been the position in the past they would certainly have no excuse for not doing it now under the new increased grants that would be given.

The Bill was read a second time and the financial resolution in connexion with it was agreed to in Committee.

NOTES ON CURRENT TOPICS

National Health Insurance Bill

In the House of Lords on Feb. 25th Viscount GAGE moved the second reading of the National Health Insurance (Amendment) Bill. It was, he said, a purely formal measure which involved no new question of principle or policy. It was really a drafting amendment to the National Insurance Act, 1936, and it had become necessary through changes of nomenclature introduced by the Pharmacy and Poisons Act, 1933. Contracts were made usually by the insurance committee of each county or county borough with chemists for the supply of medicines

to insured persons. Since the beginning of the national health insurance scheme corporate bodies equally with individuals had been entitled to enter into these contracts provided that dispensing was carried out by or under the direct supervision of qualified pharmacists. When the consolidating National Health Insurance Act, 1936, was being framed the persons entitled to undertake dispensing for health insurance purposes were described in language which was considered to be the true effect of existing enactments, but since then doubts had arisen whether the words actually covered the case of corporate bodies, and it appeared that Parliament might unwittingly have deprived them of the rights which they had always had. This Bill substituted more appropriate words with the object of regularising the contracts which had already been entered into with corporate bodies, and of making it clear that they could be entered into in future on the same basis as before the Act of 1936 was passed.

The Bill was read a second time and later passed through committee without amendment.

Factories Bill

On Feb. 25th the Factories Bill was considered by a standing committee of the House of Commons. On Clause 1 (which provides that every factory shall be kept in a clean state and the floor of every workroom shall be cleaned at least once a week by washing, sweeping, or other method), Mr. R. J. DAVIES moved an amendment that such cleaning of floors should be done at a time when work was not going on in the workroom.—Mr. G. LLOYD, Under-Secretary, Home Office, pointed out that the adoption of this amendment would make impossible the position of factories working a three-shift system, and it was withdrawn.

CUBIC SPACE

On Clause 2 (which provides that a factory shall be regarded as overcrowded if the workpeople have less than 400 cubic feet of space each), Mr. R. J. DAVIES moved an amendment to leave out a proviso that for five years the figure should be 250 cubic feet, and should afterwards continue at the lower figure where a workroom had effective mechanical ventilation. He said that the whole purpose of the clause was weakened by the proviso.—Mr. LLOYD said that there was no other way than by these elastic powers to meet the varying conditions of British industry. There were small concerns, in which to raise the minimum cubic space per head from 250 to 400 feet—an increase of 60 per cent.—would involve hardship, not only on the occupiers but on the workpeople. They would not be able to carry on with their existing workpeople and would have either to close down or discharge the extra people who could not be accommodated under the new provisions. Modern research had shown that the movement and circulation of air were more important than the actual gross cubic feet of space available. On the other hand, the Government recognised that it was desirable in certain circumstances to lay down conditions as quickly as possible. They had put down amendments in terms practically the same as those proposed by Mr. Davies, and they proposed to take power in special cases to bring the condition as to mechanical ventilation into operation before the end of the five years.—Sir E. GRAHAM-LITTLE supported Mr. Lloyd in his contention that the movement of air was more important than the amount of cubic space allowed. All modern research confirmed that.—Mr. BANFIELD said they had had some experience of this kind of proviso with regard to underground bakehouses. They were presumed to have been abolished by an Act of Parliament passed nearly 30 years ago, but that Act had a proviso of this kind that, provided premises were in continuous occupation and complied with a certain amount of cubic air space, they could be used as bakehouses. In London to-day there were still scores of underground bakehouses which were totally unsuitable. He appealed to the Government to lay down a definite period within which the 400 cubic feet provision should come into operation.—Mr. SHORT said that he quite realised the importance of some measure of elasticity in legislation, but the proviso as drafted, and even with the amendments proposed by the Under-Secretary for the Home Office, did not, he thought, provide all the necessary safeguards.—Mr. LLOYD said that the Home Office had endeavoured to meet a number of these points in a spirit of accommodation. He had asked one of the factory inspectors to come to that committee room on the previous day and calculate what would be the effect of this provision. He (Mr. Lloyd) found that under the 1901 Act 132 people could be employed in the room, but working under the present Factories Bill under the 400 cubic feet standard, only 50 people would be allowed. He was disposed to believe that on the whole the provisions in the Bill were reasonable. The International Labour Office standard was 350 cubic feet, which was less than that in the Bill. The Home Secretary would have power to increase the number of cubic feet which must be allowed for every person in special circumstances.—Mr. DAVIES, in asking leave to withdraw the amendment, said that they would be compelled to consider the whole of this problem on the report stage. From 1875 a minimum of 300 cubic feet had been provided per person in a common lodging-house; it was wrong for workers in factories to have a smaller space to work in than a tramp sleeping in a common lodging-house. He looked upon mechanical ventilation in a factory as he did upon artificial teeth in a man's mouth; it was a second best.—The amendment was withdrawn.

In the House of Commons on March 1st Mr. ELLIOT, Secretary of State for Scotland, introduced the Local Government (Financial Provisions) (Scotland) Bill, a measure to amend Part III of the Local Government (Scotland) Act, 1929, and to repeal so far as relating to Scotland Section 45 of the Unemployment Assistance Act, 1934.—The Bill was read a first time.

QUESTION TIME

WEDNESDAY, FEB. 24TH

Capitation Fee for Adolescents

Mr. ROSTRON DUCKWORTH asked the Minister of Health whether any agreement had now been reached in respect of the medical fee for juvenile patients shortly to be brought into health insurance.—Mr. HUDSON, Parliamentary Secretary to the Ministry of Health, replied: No agreement has yet been reached, but the matter is again to be brought before my right hon. friend by a deputation from representatives of the medical profession very shortly.

Industrial Workers and Dermatitis

Mr. GARDNER asked the Home Secretary whether he would consider giving legal force to an opinion first expressed by his department in 1931 and confirmed by him in a letter, dated Jan. 5th, 1937, in connexion with an industrial process in which a material known as glass-silk was used, namely that persons employed in handling this material should be provided with protective clothing, respirators, and goggles in order that the admitted risks of dermatitis and irritation of the throat and nasal passages might be as far as possible avoided.—Mr. LLOYD, Under-Secretary, Home Office, replied: I am advised that the experience of the Factory Department has not proved the effects of this material to be so serious as was feared in 1931, and the Home Office letter of last month did not go so far as to confirm the views expressed six years ago. I am, however, having special inquiries made with a view to considering what further action is called for.

THURSDAY, FEB. 25TH

The Press and Intrusion into Private Griefs

Sir ASSHETON POWNALL asked the Home Secretary whether he had now heard from the Newspaper Proprietors' Association with regard to the recommendations of its committee on the subject of complaints against certain press representatives.—Sir JOHN SIMON replied: A few

hours ago I received a letter from the Newspaper Proprietors' Association which I am causing to be published.

[The letter states that the following resolution had been passed unanimously by the Association: "The council of the Newspaper Proprietors' Association strongly condemn methods of news gathering which may cause unnecessary distress to private persons. Cases such as those which have recently received publicity in the House of Commons and elsewhere have the disapproval of all newspapers represented in the council and every effort will be made to ensure that no such charges can be made against them or their representatives." It concludes by saying that the council "will continue to employ every effort to avoid undue and improper intrusion into private griefs. They hope it will be appreciated that freedom in the collection and publication of news is just as important to a free press as freedom in the expression of views, and that all possible facilities will be granted to newspapers to maintain properly and efficiently their service of information."]

Workmen's Compensation

Mr. BROOKE asked the Home Secretary if it was the intention of His Majesty's Government to take the necessary steps to bring the law and practice of workmen's compensation in this country into harmony with the principles of the International Labour Convention of 1925, on workmen's compensation, and thus enable this country to ratify the Convention.—Sir JOHN SIMON replied: I am advised that this Convention could not be ratified without far-reaching changes in the law and medical arrangements of this country, and I see no prospect of such legislation being passed at present.

Mr. BROOKE: Can the right hon. gentleman say whether the Departmental Committee now considering this matter are also considering whether it is possible to bring the law of this country into harmony with the International Labour Convention?

Sir J. SIMON: I know that very far-reaching changes are involved.

Mr. BROOKE: Is it not possible to bring the law up to the standard of the International Convention?

Sir J. SIMON: I should like to have notice of that question.

Accommodation for Mental Patients in Lancashire

Mr. WILLIAM ROBINSON asked the Minister of Health whether in view of the fact that patients at present in various mental hospitals in Lancashire were in excess of the number allowed by statute and that, in addition, there were cases awaiting transfer from public hospitals in Liverpool and Lancashire, he would make investigations as to the cause of the delay in obtaining the approval of the Board of Control to schemes submitted to them; and if he would urge the Board of Control to expedite their approval of the Brockhall certified institution extension scheme, which had been under consideration by them for about three years.—Sir KINGSLEY WOOD replied: I am advised that the present inadequacy of accommodation for mental patients in Lancashire is not in any way due to delay on the part of the Board of Control in approving either the Brockhall Institution extension or any other schemes submitted to them by the Lancashire Mental Hospitals Board.

Health Insurance Additional Benefits

Mr. JAMES GRIFFITHS asked the Minister of Health whether he was aware that the disparity between the additional benefits provided by approved societies under the National Health Insurance Acts was having a serious effect upon the position of the poorer societies; that members were seeking to be transferred to the richer societies that provided the higher additional benefits; and whether he proposed to take steps to coördinate the administration of the Acts in such a way as to provide uniform benefits for uniform contributions.—Sir KINGSLEY WOOD replied: I am aware of the considerations mentioned, but statutory provision is already made for the protection of any society against transfer of membership due to unfavourable valuation results. Equalisation of benefits would be incompatible with the retention of the approved society system of administration and I see no sufficient reason for altering that system at the present time.

Lancashire Mental Hospitals Board

Mr. KIRBY asked the Minister of Health whether the decision of the Lancashire Mental Hospitals Board to charge the local authorities an additional 2*d*. per day per patient had been finally approved; and, if so, whether he could give the reason for the proposed increase.—Sir KINGSLEY WOOD replied: The proposed increase is a matter for the Lancashire Mental Hospitals Board and does not require my approval. I understand, however, that it is due mainly to a rise in the wages bill of the nursing staff owing to the adoption of a shorter working day and to an advance in the price of commodities such as coal and flour.

Raw Milk and Scarlet Fever

Mr. ROBERT MORRISON asked the Minister of Health whether, in view of the evidence contained in the annual report of the chief medical officer of his department for 1935 of serious outbreaks of scarlet fever solely due to the sale of raw milk, he would consider the making of regulations providing for the compulsory pasteurisation of all milk.—Sir KINGSLEY WOOD replied: I have no power to make such regulations.

Water Pollution near Manchester

Mr. MCGHEE asked the Minister of Health if his attention had been called to the serious pollution of the water-supply at Ringway, near Withenshawe, Manchester; and what steps he proposed to take to secure adequate supplies of pure water to the residents of this area.—Sir KINGSLEY WOOD replied: Yes, Sir. I am communicating with the Manchester Corporation with a view to arrangements being made to provide a pure supply at an early date.

MONDAY, MARCH 1ST

Illness among Post Office Employees

Mr. VIANT asked the Postmaster-General if he would give the number of employees in the London district of the Post Office engineering department who were absent through illness, and the average duration of such illness, for the years 1934, 1935, and 1936, and the number of employees employed for each of the aforementioned years.—Major TRYON replied as follows:

Year.	No. of employees.	Absent at any time during the year on sick leave	Average sick absence per person employed (in days).
1934	9,360	4928	8·8
1935	10,177	5396	8·2
1936	11,068	6187	7·7

Air Raid Precautions

Mr. WILSON asked the Home Secretary what plans had been made by the Air Raid Precautions Department for the provision of gas-proof shelters for public use, equipped with filtration units and pumps.—Mr. GEOFFREY LLOYD replied: It is proposed that as far as possible, members of the public should remain indoors in a part of their home or place of work which has been adapted as a refuge in accordance with instructions which will be issued. The question of the provision of refuges for persons caught in the street when a raid is imminent is under consideration; but, while the equipment required in public refuges must depend on the nature of the premises employed for the purpose, it is considered that, if ordinary safeguards are employed, the installation of filtration plant will not be required.

Mr. WILSON asked the Home Secretary whether the Air-raid Precautions Department could state by what test, in their opinion, ordinary people could detect the presence of mustard gas or lewisite without having to breathe it.—Mr. GEOFFREY LLOYD replied: Mustard gas and lewisite can be detected by visual observation or by sense of smell, which might suffice to give warning without any harmful effect. Arrangements will, however, be made for the detection of poison gas as part of the air-raid precautions organisation and if members of the

public were in danger of inhaling poisonous vapours every effort would be made to warn them of the presence of gas before they had to ascertain it for themselves.

TUESDAY, MARCH 2ND

Council of College of Nursing and Industrial Nursing

Mr. ROSTRON DUCKWORTH asked the Home Secretary whether he had received any memorandum indicating the policy of the council of the College of Nursing with regard to industrial nursing and to the care and health of the employees in factories; and whether, in that case, he would see what practical steps could be taken to give effect to its recommendations.—Sir JOHN SIMON replied: Since the question was put down I have, as no doubt have other hon. Members, received a copy of a memorandum on this subject from the College of Nursing, and it will receive my careful consideration. The policy of the College, of which I have been kept fully advised, is to provide special training for nurses employed in industrial undertakings or wishing to take up such employment. This policy has the full support of the Factory Department and both medical and other inspectors have given lectures to the nurses attending the courses.

Protection against Arsenical Gas

Mr. PARKER asked the Home Secretary what was the rate of rise of pressure across the filter when arsenic smokes were present in the area in a concentration of 0·6 gramme per cubic metre and were breathed through a civilian respirator.—Mr. GEOFFREY LLOYD, Under-Secretary, Home Office, replied: The concentration of arsenical gas mentioned in the question is extremely high and such as can only be produced in quite exceptional circumstances. It is considered that such concentrations are unlikely to be encountered by the general civilian population under ordinary practical conditions, and the question as to the behaviour of the civilian respirator under these hypothetical conditions has, therefore, no practical significance.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdr. G. S. Rutherford to *Drake* for R.N.B.

Surg. Comdr. (D) S. E. Brown to Hosp. Ship *Maine*.

Surg. Lt.-Comdrs. T. L. Cleave and C. B. Nicholson to R.N. Hosp., Hong-Kong; and T. G. B. Crawford to *Curacoa*.

Surg. Lt.-Comdr. (D) H. A. Ginn to *Cyclops*.

Surg. Lts. F. W. Baskerville to *Wildfire*; and G. H. G. Southwell-Sander to *President* for course.

Surg. Lt. S. R. G. Pimm placed on Retd. List at own request.

Surg. Lts. (D) D. D. Craig to *Resource*; H. W. Gibbs to *Drake* for R.N.B.; K. E. J. Fletcher to *Medway*; and J. C. Benson to *Dorsetshire*.

To be Surg. Lts. (D): W. A. Dickie, W. I. N. Forrest, and F. S. Roff.

Mr. E. H. C. Earl and Mr. L. H. Terry have been appointed Admiralty Surgeons and Agents at Torquay and Goodwick, Pembrokeshire, respectively.

ARMY MEDICAL SERVICES

Maj.-Gen. T. S. Coates, C.B., O.B.E., K.H.P., late R.A.M.C., retires on ret. pay.

Col. F. D. G. Howell, D.S.O., M.C., K.H.S., late R.A.M.C., to be Maj.-Gen.

Maj.-Gen. Howell was gazetted to the rank on assuming the post of D.D.M.S. at Aldershot in succession to Maj.-Gen. Coates, who has had 34 years' service and was D.D.M.S. in the Northern Command before going to Aldershot.

Lt.-Col. J. S. McCombe, D.S.O., from R.A.M.C., to be Col.

ROYAL ARMY MEDICAL CORPS

Maj. and Bt. Lt.-Col. S. Smith to be Lt.-Col.

Short Service Commissions: Lt. J. H. Caverhill to be Capt.

Lts. (on prob.) confirmed in their rank: W. N. L. Haynes, J. R. Kellett, K. G. F. Mackenzie, R. A. Hoey, R. J. G. Morrison, J. Shields, A. T. Marrable, C. W. Maisey, W. Thomson, W. Stewart, G. B. Heugh, J. A. Davidson, E. A. Smyth, R. S. Hunt, J. V. L. Farquhar, C. L. Lewis, G. G. Smith, P. H. Ball, E. H. Evans, W. D. Eustace, I. N. Fulton, N. R. Murdoch, and W. Laurie.

Lt. (on prob.) V. Bennett is restd. to the estabt.

W. Laurie to be Lt. (on prob.).

The following candidates (R.A.M.C.) were successful in the examination (in written subjects) of officers with a view to promotion in the Regular Army and Indian Army, which was held in India and Burma in October last: Majs. D. J. H. Jones and G. W. Rose; and Capts. W. G. S. Foster, L. T. Furnivall, and H. C. M. Walton.

REGULAR ARMY RESERVE OF OFFICERS

Maj. M. G. Dill and Capt. C. Robb, having attained the age-limit of liability to recall, cease to belong to the Res. of Off.

ARMY DENTAL CORPS

Applications are invited from dental surgeons for appointment to eight commissions in the Army Dental Corps. Candidates will be selected for these commissions without undergoing competitive examination and must not be over the age of 28. Successful candidates will be given short service commissions for six years, at the end of which period they will retire with a gratuity of £1000 or apply for permanent commissions. Full particulars and form of application may be obtained from the Director, Army Dental Service, War Office, London, S.W.1.

Capt. C. C. Marston, having attained the age-limit of liability to recall, ceases to belong to the Res. of Off.

Short Service Commissions: Lts. (on prob.) confirmed in their rank: C. O. B. Stibbs, H. M. Barbour, and A. E. Allan.

TERRITORIAL ARMY

Lt.-Col. and Bt. Col. G. J. Linklater, O.B.E., from Gen. List, R.A.M.C., to be Col. and is apptd. A.D.M.S., 52nd (Lowland) Div; and Col. A. P. Watson, O.B.E., T.D., vacates the appt. on completion of tenure.

Lt.-Col. W. H. Kerr, from Gen. List, R.A.M.C., to be Col. and is apptd. A.D.M.S., 53rd (Welsh) Div.; and Col. F. T. Rees, M.C., vacates the appt. on completion of tenure.

Maj. J. P. J. Jenkins to be Lt.-Col. and to comd. the 158th (Welsh) Fd. Amb.

Maj. C. D. Bruce to be Lt.-Col. and to comd. the 155th (Lowland) Fd. Amb.

Lt. A. D. Davidson, from 51st (Highland) Divl. Sig., to be Capt.

G. D. Matthew to be Lt.

Supernumerary for Service with O.T.C.—Lt.-Col. C. H. Carlton, M.C., to be Bt. Col.

Lt. M. K. Braybrooke to be Capt.

Lt. R. L. Harward to be Capt.

A. J. Webster (late Cadet Serjt., George Watson's Coll. Contgt., Jun. Div., O.T.C.) to be Lt.

I. B. Speight to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS

Maj. W. Baxter, from Active List, to be Maj.

Capt. A. W. Henderson, from Active List, to be Capt.

ROYAL AIR FORCE

Group Capts. R. J. Aherne, M.C., to R.A.F. General Hosp., Hinaidi, Iraq, to command; and T. Montgomery to Headquarters, R.A.F., India, New Delhi, for duty as Principal Medical Officer.

Wing Comdr. E. A. Lumley, M.C., to Headquarters, R.A.F., Iraq, Hinaidi, for duty as Deputy Principal Medical Officer (Hygiene).

Flight Lt. D. A. Wilson is promoted to the rank of Squadron Leader.

Flight Lts. A. S. Amsden and H. E. Bellringer to Headquarters, R.A.F., Iraq, Hinaidi.

Flying Offrs. V. D. Jones to No. 28 (Army Coöperation) Squadron, Ambala, India; R. C. O'Grady to No. 5 (Army Coöperation) Squadron, Chaklala, India; and C. C. Barker and F. L. Whitehead to Headquarters, R.A.F., Iraq, Hinaidi.

RESERVE OF AIR FORCE OFFICERS

Flight Lt. J. B. Murphy relinquishes his commission on completion of service.

MEDICAL NEWS

University of Oxford

On Feb. 27th the honorary degree of D.Sc. was conferred on Prof. T. Svedberg of Upsala. After the congregation Prof. Svedberg brought into use the ultra-centrifuge in the department of biochemistry and demonstrated its action. He is its inventor and maker (see *Lancet*, 1936, 2, 874).

The degree of D.M. was conferred on W. H. Owles and D. H. Brinton.

Last Saturday Sir Arthur Salter was returned to Parliament at the Oxford University by-election. He stood as an Independent and received 7580 votes, against 3917 given to Sir Farquhar Buzzard, F.R.C.P. (Conservative), and 3608 to Prof. F. A. Lindemann, F.R.S. (Independent Conservative).

At a congregation on Tuesday Sir Farquhar Buzzard, regius professor of medicine in the University, moved a decree that a special allowance of £500 a year be paid to any Nuffield professor who undertakes not to retain fees given him for attendance on patients in hospitals associated with the Nuffield scheme. A professor could thus give up his fees for an annual payment and his services would be at the disposal of patients and colleagues in cases of special interest.

University of Cambridge

Mr. James Gray, Sc.D., reader in experimental zoology in the University, has been appointed to the chair of zoology in succession to Prof. J. Stanley Gardiner, F.R.S., who is retiring at the end of September.

Royal College of Surgeons of England

The spring course of museum demonstrations at the Royal College of Surgeons has begun and to-day, Friday, Dr. A. J. E. Cave will give the second, when he will speak on anatomy of the knee-joint. He will also demonstrate the anatomy of the nasal fossæ and sinuses on March 12th and of the trigeminal nerve on March 19th. The remaining lectures will be given on March 8th by Dr. L. W. Proger, who will describe recent additions to the museum, and on March 15th by Dr. C. Keith Simpson, who will speak on the pathology of the adrenal gland in relation to sudden death. All the demonstrations will be given at the College, Lincoln's Inn-fields, W.C., at 5 P.M., and they are open to advanced students and medical practitioners.

Increased Use of Milk

Sir Kingsley Wood, with Lord Feversham (Parliamentary Secretary to the Ministry of Agriculture), received on Tuesday last a deputation from the National Federation of Women's Institutes, introduced by Lady Denman. The object of the deputation was to bring to the notice of the Minister of Health a resolution urging the Government to take such action to reduce the retail price of milk as would operate without detriment to the producer. They said their inquiries showed that owing to the high price of milk its consumption in rural districts, which was already low, was decreasing and the taste for milk lessened. They thought it impossible for a family to purchase the amount considered necessary for good health on the wage of an agricultural labourer. Sir Kingsley Wood, in reply, said it was beyond question that we should as a country drink much more milk. Moreover, it was important to emphasise that the milk we consumed should be safe, clean, and wholesome. After speaking of the steps already taken to increase consumption of milk (the milk-in-schools scheme; distribution of liquid or dried milk by over 400 maternity and child welfare authorities; the work of the National Milk Publicity Council; and experiments by which the Milk Marketing Board provided milk at reduced rates in the Rhondda, at Jarrow, and elsewhere), he said that the far-reaching recommendations made in the recent report of the Milk Reorganisation Commission were now being considered by the Government. In many areas, including the necessitous areas, local authorities would, if Parliament approved the proposals now before it, have increased resources after April next to provide milk, free of charge or at a reduced rate, for mothers and young children, as well as school-children.

Marie Curie Hospital

Queen Mary has consented to visit this hospital on Friday, March 19th, to open the Helen Chambers research laboratories.

British Red Cross Society

The Queen has assumed the office of president of this society, and the Duke of Gloucester has become chairman of the council in place of his brother who is now King and who becomes patron of the society.

Eichholz Clinic

Sir Humphry Rolleston has accepted the chairmanship of the medical board of this clinic in succession to the late Lord Moynihan. The clinic employs a staff of blind chartered masseurs and is administered by the National Institute for the Blind.

Central Association for Mental Welfare

A course for persons engaged in the training of mental defectives in occupation centres or mental hospitals will be held in London from July 5th to 24th. Further information may be had from the secretary of the association, 24, Buckingham Palace-road, S.W.

Presentation to Dr. Prest

On his retirement from the post of medical superintendent of Glenafton Sanatorium, New Cumnock, Dr. Edward Prest was presented with a silver salver from the staff and with a canteen of cutlery and a wireless set from subscribers in the county.

Mental After-Care Association

The annual meeting of this association will be held at the Girdlers' Hall, 39, Basinghall-street, London, E.C., on Wednesday, March 10th, at 3.15 P.M. Lord Wakefield will preside and the speakers will include the Bishop of London, Dr. G. A. Lilly, Dr. Isobel Wilson, and Dr. Reginald Worth.

Margaret-street Hospital, London

At the annual meeting of this Marylebone hospital for diseases of the chest it was stated that the out-patients have increased this year to 160 per week as compared with 144 per week last year, owing largely to treatment given in the X ray clinic.

British Institute of Philosophy

An address will be given by Mr. N. J. T. Needham, Sc.D., entitled "Should Our Rulers be Biologists?" on Tuesday, March 16th, at 8.15 P.M., at University College, Gower-street, London, W.C. Prof. Lancelot Hogben, F.R.S., will take the chair, and cards of admission may be obtained from the director of studies at University Hall, 14, Gordon-square, W.C.1.

Royal Society of Medicine

This society's house and library will be closed from Friday, March 26th, to Monday, March 29th, both days inclusive. The library will be closed at 6.30 P.M. on Thursday, March 25th, and on Tuesday, March 30th.

Institute of Hospital Almoners

Dr. A. B. Howitt, M.P., took the chair at the annual general meeting held at the Westminster Palace Rooms on Feb. 25th, when Sir George Newman gave an address. He had learned, Sir George said, the philosophy of almonry from Jeremy Bentham, Edwin Chadwick, Florence Nightingale, Thomas Barnardo, and Robert Morant. Originally the hospital almoner's work was to assess, collect, and adjust the voluntary payments of patients, but it had now become a great educational and creative movement, for it was coming to be realised that medicine must be social as well as medical and that disease was the biggest factor in industrial welfare. It was clear from what was said at the meeting that the demand for almoners still exceeds the supply, and there is a temptation to shorten the period of training in order to meet it, but the council of the Institute is setting its face against any lowering of the standard or shortening of the period of training.

Hospital Saving Association

The sum of £502,492 was paid to London hospitals last year (ending June 30th) by the association and some £58,051 to provincial hospitals. These sums together with refunds amounted to £704,451.

League of Nations Health Administration

Dr. E. J. Bigwood (of the Solvay Institute of Physiology, Brussels) and Dr. Hazel Stiebeling (senior food economist at the Bureau of Home Economics, Washington) will speak on nutritional work in connexion with the League of Nations on Wednesday, March 10th, at 5 P.M., in the theatre of the Lister Institute of Preventive Medicine, Chelsea Bridge-road, S.W.1 (nearest station, Sloane-square). All interested are invited to attend.

Papworth Village Settlement

In the autumn of 1935 Lord Nuffield offered to give the settlement £25,000 when it had itself raised £75,000. Papworth has now managed to raise £60,000 of the total needed, and on Tuesday, April 20th, the Duke of Kent will preside over a festival dinner at Grosvenor House, when it is hoped to raise the final sum which is required to render Lord Nuffield's offer effective. Tickets may be had from the London offices of the settlement, which have recently been moved to 16, Grosvenor-place, S.W.

Births, Marriages, and Deaths

BIRTHS

DUNKERLEY.—On Feb. 23rd, at Westerham, Kent, the wife of Dr. Arthur H. Dunkerley, of a son.

HARDING.—On Feb. 27th, at Sheffield, the wife of Dr. Harold E. Harding, of a son.

HASLER.—On Feb. 21st, at Harman Drive, N.W., the wife of Dr. J. K. Hasler, of a son.

HEESOM.—On Feb. 26th, the wife of Dr. Alan Heesom, Redhill, of a son.

HUNTER.—On Feb. 22nd, at Plymouth, the wife of Dr. T. A. A. Hunter, of a son.

MARSHALL.—On Feb. 21st, at Southampton, the wife of Dr. R. M. Marshall, of a son.

MASON.—On Feb. 24th, at Hampstead, N.W., the wife of Mr. F. Courtenay Mason, F.R.C.S., of a son.

MACFARLANE.—On March 1st, at Devonshire-place, W., the wife of Dr. R. G. Macfarlane, of a daughter.

MARRIAGES

BENNETT—STOKES.—On Feb. 17th, at St. Thomas's Cathedral, Bombay, Major Roland Antony Bennett, R.A.M.C., M.D., to Constance Elizabeth Nanette Stokes, Q.A.I.M.N.S., daughter of the late Frederick Watkin Stokes and Mrs. Stokes, Sevenoaks, Kent.

DEATHS

AITCHISON.—On Feb. 25th, at Crawley, Sussex, Robert Swan Aitchison, M.D., F.R.C.P. Edin.

BOWKER.—On Feb. 20th, at Cwmbran House, Pontnewydd, Mon., Charles Stanser Bowker, L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., Captain R.A.M.C., aged 73.

COCHRANE.—On Feb. 26th, Gilbert Cochrane, M.B. Glasg., M.O.H. for Bromsgrove.

CORKER.—On Feb. 24th, at Lexham-gardens, W., Major-General Thomas Martin Corker, C.B., M.D., M.S., Q.U. Irel., LL.D., Knight of Grace of St. John of Jerusalem, Army Medical Service (retired).

HOWELL.—On Feb. 26th, at Lincoln, Colonel Harry Arthur Leonard Howell, C.M.G., L.R.C.P. & S. Edin., late R.A.M.C., aged 69.

JACKSON.—On Feb. 23rd, Sir Henry Jackson, Bt., M.A. Camb., M.B. Edin., of Putney Hill, S.W., M.P. Central Wandsworth.

LIDDELL.—On Feb. 28th, at Estoril, Portugal, John Liddell, M.D. Edin., of Highworth, Wilts, formerly of Harrogate.

LUMSDEN.—On Feb. 27th, at Fleet, Hants, Col. Philip James Lumsden, M.B. Aberd., late I.M.S.

MANUEL.—On Feb. 22nd, at Mexico City, Alec Manuel, M.B. Lond., late of Casa Amata, Bordighera, aged 58.

PINKERTON.—On Feb. 23rd, at South Norwood Hill, S.E., Robert Lachlan Pinkerton, M.D. Glasg., J.P., aged 71.

POTTS.—On Feb. 27th, at Leatherhead, Laurence Potts, M.R.C.S. Eng., in his 85th year.

STANSFIELD.—On Feb. 28th, at Reading, Frederic Wilson Stansfield, M.D. Vict., F.L.S., in his 83rd year.

THOMAS.—On Feb. 25th, at Westminster Hospital, Arthur H. L. Thomas, M.R.C.S. Eng., of Vincent-square, S.W.

TONGE.—On Feb. 23rd, at Beer, Devon, Edward Tonge, M.B.E., M.B. Durh.

WIGGINS.—On Feb. 26th, William Denison Wiggins, M.R.C.S. Eng., D.P.H., Medical Supt., St. Alfege's Hospital, Greenwich.

WRIGHT.—On Feb. 23rd, at Kenton, Middlesex, William Gordon Wright, M.R.C.S. Eng., of Accrington.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

MEDICAL APPOINTMENTS TO THE KING

TUESDAY'S *London Gazette* announces appointments newly made to His Majesty's household. In the following list the sign (*) denotes that the person mentioned held the same office in the medical household of King George V; the sign (†) denotes that he held it in the household of King Edward VIII.

Physicians. — *†Viscount Dawson of Penn, P.C., G.C.V.O., K.C.B., K.C.M.G., P.R.C.P.; †Lord Horder, K.C.V.O., F.R.C.P.; Sir John Weir, K.C.V.O., C.M.G., M.B. (at present physician to Queen Mary's household); Sir Maurice Cassidy, K.C.V.O., C.B., F.R.C.P. (formerly physician extraordinary to the household).

Extra Physicians.—Sir Farquhar Buzzard, Bt., K.C.V.O., F.R.C.P. (formerly physician in ordinary); †Prof. J. A. Ryle, F.R.C.P.; G. F. Still, F.R.C.P.; H. Letheby Tidy, F.R.C.P.

Serjeant Surgeon.—*†Wilfred Trotter, F.R.C.S., F.R.S.

Surgeons.—*†Sir Thomas Dunhill, K.C.V.O., C.M.G., F.R.A.C.S.; †Sir James Walton, K.C.V.O., F.R.C.S.; Sir Lancelot Barrington-Ward, K.C.V.O., F.R.C.S.

Surgeon Oculist.—†Sir Stewart Duke-Elder, F.R.C.S.

Consulting Surgeon Oculist.—†Sir William Lister, K.C.M.G., K.C.V.O., F.R.C.S.

Manipulative Surgeon. — †Sir Morton Smart, K.C.V.O., D.S.O., M.D.

Surgeon Dentist.—C. S. Morris, M.R.C.S., L.D.S.

Surgeon Apothecary to His Majesty and Apothecary to the Household.—*†Sir Stanley Hewett, K.C.B., K.C.V.O., K.B.E., M.D.

Physicians to the Household.—†Arnold Stott, F.R.C.P.; Daniel T. Davies, F.R.C.P.

Surgeon to the Household.—A. E. Porritt, F.R.C.S.

Surgeon Oculist to the Household.—†Frank Juler, F.R.C.S.

Surgeon Dentist to the Household.—*†F. D. Donovan, L.D.S.

Surgeon Apothecary to the Household at Windsor.—*†Sir Henry Martyn, K.C.V.O., F.R.C.S.

Surgeon Apothecary to the Household at Sandringham.—*†Sir Frederic Willans, K.C.V.O., M.R.C.S.

Lieut.-Colonel Leslie McCarthy is again reappointed coroner of the household at Windsor Castle.

SCOTLAND

Physicians.—*†John Cowan, M.D.; †Alex. Greig Anderson, F.R.C.P.; Prof. John McNee, D.S.O., F.R.C.P.

Extra Physicians.—†Sir Robert Philip, M.D.; Sir Ashley Mackintosh, K.C.V.O., F.R.C.P.E. (formerly physician to the King in Scotland).

Surgeons.—*†Sir John Fraser, K.C.V.O., M.C., F.R.C.S.E.; *†Prof. J. R. Learmonth, F.R.C.S.E.

Surgeon Oculist.—*†Arthur Sinclair, F.R.C.S.E.

Surgeon Dentist.—*†L. C. Broughton-Head, M.B., L.D.S.

Surgeon Apothecary to the Household at Balmoral.—*†George Middleton, M.B.

Surgeon Apothecary to the Household at Holyroodhouse.—*†Norman Carmichael, F.R.C.P.E.

ROYAL LONDON OPHTHALMIC HOSPITAL.—The annual dinner of past and present students of this hospital will be held at the Langham Hotel, Portland-place, on Thursday, March 11th, at 7.30 P.M. Mr. T. Harrison Butler, consulting surgeon to the Birmingham and Midland Eye Hospital, will be in the chair, and Mr. Charles Goulden, 89, Harley-street, London, W.1, is acting as hon. secretary.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
MONDAY, March 8th.
United Services. 4.30 P.M. Group Captain Struan Marshall: Respiration in High Flying.
TUESDAY.
Therapeutics and Pharmacology. 5 P.M. Prof. E. C. Dodds and Dr. R. L. Noble: Relationship between the Pituitary and Gastric Secretion. Dr. Lucy Wills: Extracts of Liver and Yeast: their Varying Efficiency in the Treatment of Macrocytic Anæmias.
Psychiatry. 8.30 P.M. Dr. J. H. Van der Hoop (Amsterdam): The Problem of Intuition in Medical Psychology.
WEDNESDAY.
Surgery: Subsection of Proctology. 8.15 P.M. Dr. A. F. Hurst: Melanosis Coli. Dr. Hurst and Mr. Gaymer Jones: 1. Regional Colitis. Mr. L. E. C. Norbury: 2. Melanosis Cæci.
FRIDAY.
Ophthalmology. 5 P.M. Clinical Meeting at St. Thomas's Hospital, S.E.
Epidemiology and State Medicine. 8.15 P.M. Sir Frederick Hobday: The Epidemiology of Animal and Human Diseases.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, W.
MONDAY, March 8th.—8.30 P.M., Mr. G. R. Girdlestone: Effects of Prolonged Dorsal Decubitus.

ASSOCIATION OF INDUSTRIAL MEDICAL OFFICERS.
FRIDAY, March 12th.—4.45 P.M. (London School of Hygiene, Keppel-street, W.C.), Business Meeting. 6 P.M., Mr. Eric Farmer: Accident Proneness, Suggested Factory Investigations. Dr. F. H. C. Beards: Organised Treatment and Rehabilitation of the Injured Workman.
SATURDAY.—10 A.M. (Carreras Limited, Hampstead-road, N.W.), Visit to Clinic and Works with Dr. T. O. Garland.

LONDON JEWISH HOSPITAL MEDICAL SOCIETY, Stepney Green, E.
THURSDAY, March 11th.—3.45 P.M., Miss Muriel Landau: Menstruation. Dr. S. Levy Simpson: The Menopause. Mr. A. A. Davis: Subject to be announced. Dr. A. Loeser: Film on the Hormonal Origin of Menstruation.

SOUTH-WEST LONDON MEDICAL SOCIETY.
WEDNESDAY, March 10th.—9 P.M. (Bolingbroke Hospital, Wandsworth Common), Dr. W. E. Lloyd will take the chair at a Clinical Meeting.

PADDINGTON MEDICAL SOCIETY.
TUESDAY, March 9th.—9 P.M. (Paddington Tuberculosis Dispensary, 20, Talbot-road, W.), Dr. R. S. Walker: Demonstration of Technique of Artificial Pneumothorax on Patients.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.
FRIDAY, March 12th.—8.45 P.M. (Miller General Hospital, Greenwich, S.E.), Dr. R. R. Trail: Differential Diagnosis of Chest Diseases.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY.
THURSDAY, March 11th.—8.30 P.M. (11, Chandos-street, W.), Dr. Margaret Lowenfeld: The Toddler and the School-child (Symposium on Mental Health in Childhood and Adolescence, III).

BIOCHEMICAL SOCIETY.
FRIDAY, March 12th.—2.30 P.M. (University College, Gower-street, W.C.), Short Communications and Demonstration.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.
TUESDAY, March 9th, and THURSDAY.—Dr. Crighton Bramwell: The Arterial Pulse in Health and Disease. (Lumleian lectures.)

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.
MONDAY, March 8th.—5 P.M., Dr. L. W. Proger: Recent Additions to the Museum.
FRIDAY.—5 P.M., Dr. A. J. E. Cave: Anatomy of Nasal Fossæ and Sinuses.

ROYAL SOCIETY OF ARTS, John-street, W.C.
WEDNESDAY, March 10th.—8.15 P.M., Dr. C. S. Myers, F.R.S.: Industrial Psychology and the Modern World.

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane-road, W.
TUESDAY, March 9th.—4.30 P.M., Dr. Gardiner-Hill: Endocrine Diseases and Disturbances.
WEDNESDAY.—Noon, clinical and pathological conference (medical). 2 P.M., Dr. Gray: Pathology of Bone Diseases. 3.15 P.M., clinical and pathological conference (surgical). 4.30 P.M., Miss Honor Fell, D.Sc.: Tissue Culture.
THURSDAY.—Noon, clinical and pathological conference (obstetrics and gynæcology). 2.30 P.M., Dr. Duncan White: Radiological Demonstration. 3.30 P.M., Mr. A. K. Henry: Demonstrations on the Cadaver of Surgical Exposures. 3.30 P.M., Mr. V. B. Green-Armytage: Sterility.
FRIDAY.—2 P.M., operative obstetrics. 2.30 P.M., Prof. Hey Groves: Fractures. 3 P.M., department of gynæcology, pathological demonstration.
Daily, 10 A.M. to 4 P.M., medical clinics, surgical clinics and operations, obstetrical and gynæcological clinics and operations.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.
MONDAY, March 8th.—10 A.M., skin clinic. 11 A.M., surgical wards. 2 P.M., operations, surgical and gynæcological wards, medical, surgical, and gynæcological clinics.
TUESDAY.—10 A.M., medical wards. 11 A.M., surgical wards. 2 P.M., operations, medical, surgical, and throat clinics. 4.15 P.M., Dr. Konstam: Some Recent Advances in Therapeutics.
WEDNESDAY.—10 A.M., children's ward and clinic. 11 A.M., medical wards. 2 P.M., gynæcological operations, medical, surgical, and eye clinics. 4.15 P.M., Dr. Redvers Ironside: Constitutional Symptoms in Pituitary Disease.
THURSDAY.—10 A.M., neurological and gynæcological clinics. Noon, fracture clinic. 2 P.M., operations, medical, surgical, and genito-urinary and eye clinics.
FRIDAY.—10 A.M., medical wards, skin clinic. Noon, lecture on treatment. 2 P.M., operations, medical, surgical, and throat clinics. 4.15 P.M., Mr. Vlasto: The Tonsil Question.
SATURDAY.—10 A.M., children's and surgical clinic. 11 A.M., medical wards.
The lectures at 4.15 P.M. are open to all medical practitioners without fee.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, March 8th, to SATURDAY, March 13th.—NATIONAL TEMPERANCE HOSPITAL, Hampstead-road, N.W. Tues., 8.30 P.M., Mr. Hamilton Bailey: Testicle and Prostate.—ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great Portland-street, W. All-day course in orthopædics.—INFANTS HOSPITAL, Vincent-square, S.W. All-day course in infants' diseases.—WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck-street, W. Afternoon course in neurology for M.R.C.P. candidates.—ROYAL CHEST HOSPITAL, City-road, E.C. Mon., Wed., and Fri., 8 P.M., M.R.C.P. course in chest and heart diseases (open to non-members).—BROMPTON HOSPITAL, S.W. 5 P.M., twice weekly, M.R.C.P. course in chest diseases.—Unless otherwise stated courses are open only to members of the fellowship.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James' Hospital, Ouseley-road, S.W.
WEDNESDAY, March 10th.—4 P.M., Dr. C. M. Wilson: Asthma.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, March 11th.—2 P.M., Dr. Wilfred Pearson: Urinary Antiseptics in Genito-urinary Disorders. 3 P.M., Mr. Eric Lloyd: Technique in Operations on the Knee-joint.
Out-patient clinics daily at 10 A.M. and ward visits at 2 P.M.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL, N.W.
WEDNESDAY, March 10th.—4 P.M., Dr. C. J. Massey Dawkins: Recent Advances in Anæsthesia and their Application to General Practice.

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, March 8th.—3.30 P.M., Dr. Kinnier Wilson: Congenital and Heredo-familial Diseases (III).
TUESDAY.—3.30 P.M., Dr. Grainger Stewart: Epilepsy.
WEDNESDAY.—3.30 P.M., Dr. Kinnier Wilson: Clinical Demonstration.
THURSDAY.—3.30 P.M., Dr. Critchley: Vascular Diseases of the Brain (IV).
FRIDAY.—3.30 P.M., Dr. Purdon Martin: Acute Encephalitis and Myelitis.
Out-patient clinic daily at 2 P.M.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, March 12th.—4 P.M., Mr. Harold Kisch: Frontal Sinusitis—Diagnosis and Treatment.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART Westmoreland-street, W.
TUESDAY, March 9th.—5.30 P.M., Dr. T. F. Cotton: Heart Failure and its Treatment.

ST. JOHN CLINIC AND INSTITUTE OF PHYSICAL MEDICINE, 42, Ranelagh-road, S.W.
FRIDAY, March 12th.—4.30 P.M., Dr. Philip Ellman: Drug Therapy in the Rheumatic Diseases.

MANCHESTER ROYAL INFIRMARY.
TUESDAY, March 9th.—4.15 P.M., Mr. P. R. Wrigley: Chronic Appendicitis.
FRIDAY.—4.15 P.M., Mr. A. H. Southam: Demonstration of Surgical Cases.

ANCOATS HOSPITAL, Manchester.
THURSDAY, March 11th.—4.15 P.M., Mr. E. E. Hughes: Renal Tumours.

LEEDS GENERAL INFIRMARY.
TUESDAY, March 9th.—3.30 P.M., Mr. Digby Chamberlain: Peptic Ulcer.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.
WEDNESDAY, March 10th.—4.15 P.M. (Royal Maternity and Women's Hospital), Dr. R. A. Lennie: Antenatal Care.

Appointments

BRINTON, DENIS, B.M. Oxon., M.R.C.P. Lond., has been appointed Hon. Assistant Physician to the Royal London Ophthalmic Hospital (Moorfields).

BUNTING, F. W., M.B. Glasg., D.P.H., Assistant Medical Officer for Bristol.

BURROWS, T. E., M.R.C.S. Eng., D.P.M., Senior Assistant Medical Officer at the East Sussex County Mental Hospital, Hellingly.

COPELAND, C. L., M.B. Liverp., D.P.M., Deputy Medical Superintendent of the Upton Mental Hospital, Chester.

COWAN, H. K., M.D. Belf., D.P.H., County Medical Officer of Health and School Medical Officer for Gloucestershire.

CRAIG, PATIENCE, M.B. Manch., D.P.H., Assistant Medical Officer of Health for Newport, Mon.

FLEMING, G. W. T. H., M.R.C.S. Eng., D.P.M., Medical Superintendent at Barnwood House Mental Hospital, Gloucester.

FLIND, JAMES, M.D. Glasg., D.P.M., Psychiatrist to the Metropolitan Hospital, London.

HAM, CONSTANCE, M.B. Brist., F.R.C.S. Edin., Resident Medical Officer, Frenchay Park Children's Orthopædic Hospital and Sanatorium, Bristol.

HARVEY, C. A., M.B. Aberd., D.P.H., Assistant County Medical Officer and Medical Officer of Health for Biggleswade.

MCDOWALL, ANDREW, M.B. Edin., F.R.C.S. Eng., Resident Surgical Officer at Bradford Royal Infirmary.

MAXWELL, R. W., M.R.C.S. Eng., D.P.M., Third Assistant Medical Officer at Berrywood Mental Hospital, Northampton.

OFFORD, H. E., M.B. Lond., D.M.R., Registrar in the X Ray Therapy Department of University College Hospital.

PRICE, R. E. A., M.R.C.S. Eng., Hon. Physician to the Dermatological Department of King George Hospital, Ilford (temporary appointment).

*RAMAGE, GERALD, M.D. Manch., D.P.H., Assistant County Medical Officer of Health for Holland (Lincs).

ROBERTSON, G. S., M.B. Glasg., Medical Superintendent, Calderstone Institution, Whalley, near Blackburn.

WILLIAMSON, ROBERT, M.R.C.S. Eng., Resident Medical Officer at Atkinson Morley's Convalescent Hospital, Wimbledon.

Certifying Surgeons under the Factory and Workshop Acts: Dr. T. J. T. WILMOT (Louth District, Lincoln); Dr. A. J. Rae (Bromsgrove District, Worcester); Dr. H. CAMERON (Cranbrook District, Kent).

* Subject to confirmation.

Vacancies

For further information refer to the advertisement columns

Acton Hosp., W.—Cas. O., at rate of £150.

Barbados.—Chief M.O., £1000.

Barnsley, Beckett Hosp. and Dispensary.—Jun. H.S., £200.

Barnstaple, North Devon Infirmary.—Res. M.O., at rate of £150.

Barrow-in-Furness County Borough.—Asst. M.O.H. and Asst. School M.O., £500.

***Bath, Royal United Hosp.*—H.S. to Ear, Nose, and Throat Dept., at rate of £150.**

Beckenham, Bethlem Hosp., Monks Orchard.—Two Res. H.P.'s, each at rate of £150.

***Birmingham, Selly Oak Hosp.*—Jun. M.O., at rate of £200.**

***Blackburn, Queen's Park Hosp. and Institution.*—Res. Jun. Asst. M.O., at rate of £150–£200.**

Blackburn Royal Infirmary.—Res. Surg. O., £250.

Bolton Royal Infirmary.—Asst. Res. Surg. O., £200.

Bradford Children's Hosp.—H.S., £100.

Bradford Royal Eye and Ear Hosp.—H.S., £180.

Brighton, New Sussex Hosp. for Women.—H.S., £100.

Brighton, Royal Sussex County Hosp.—Cas. H.S., £120.

***British Postgraduate Medical School, Ducane-road, W.*—Cas. O., at rate of £150.**

Burnley, Victoria Hosp.—H.S., at rate of £150.

Burton-on-Trent General Infirmary.—H.S., £150.

Buxton, Devonshire Royal Hosp.—H.P., at rate of £150–£175.

Canterbury, Kent and Canterbury Hosp.—H.S., at rate of £125.

Colonial Medical Service.—Thirty Vacancies, £600–£700.

Connaught Hosp., Walthamstow, E.—Med. Reg. and Cas. O., at rate of £150 and £100 respectively.

Dover Borough.—Temp. Asst. M.O.H., £600.

Durham County Hosp.—H.S., at rate of £150.

Durham, Richard Murray Hosp., Blackhill.—H.S., £200.

Ealing, King Edward Memorial Hosp.—Jun. Res. M.O., at rate of £150.

***Elizabeth Garrett Anderson Hosp., Euston-road, N.W.*—Hon. Psychiatrist.**

Evelina Hosp. for Sick Children, Southwark, S.E.—H.S., at rate of £120.

Exeter, Royal Devon and Exeter Hosp.—H.S. to Ear, Nose, and Throat Dept., at rate of £150.

Gloucestershire Royal Infirmary.—H.S. to Ear, Nose, and throat Dept., at rate of £150.

Guildford, Royal Surrey County Hosp.—H.S., at rate of £150.

Halifax Royal Infirmary.—Second H.S., at rate of £175.

Harefield County Sanatorium.—Physician, £1000.

Harrogate, Royal Bath Hosp.—Res. M.O., £156.

Herefordshire General Hosp.—H.S. and Cas. O., £100.

Holland (Lincs) County Council.—Asst. M.O.H., £600.

Hosp. for Sick Children, Great Ormond-street, W.C.—Res. H.P. and Res. H.S., each at rate of £100.

Hull Royal Infirmary.—H.S. to Ophth. and Ear, Nose, and Throat Dept., at rate of £150.

Ilford, King George Hosp.—H.P., at rate of £100.

Ipswich County Borough.—M.O.H., £1000.

Lancaster County Mental Hosp.—Asst. M.O., £500.

Lancaster Royal Infirmary.—Two Jun. H.S.'s, each at rate of £130.

Leeds Hosp. for Women.—Hon. Anæsthetist.

Leicestershire County Council.—Asst. County M.O.H., £700.

***Leigh Infirmary, Lancashire.*—Sen. and Jun. Res. H.S.'s, at rate of £250 and £150 respectively.**

Liverpool Royal Infirmary.—Jun. Cas. O. and H.S. to Skin Dept., at rate of £60.

***Liverpool Sanatorium, Delamere Forest, Frodsham.*—Sen. Asst. to Med. Supt., £325.**

Liverpool University, Faculty of Medicine.—Sen. Lecturer, £600.

London County Council.—Two Res. Med. Supts., £1300 and £1100. Asst. M.O.'s (Grades I and II), each £350 and £250. also Temp. Dist. M.O. for Area V, £150.

London Homœopathic Hosp., Great Ormond-street, W.C.—H.P., at rate of £200.

London Hosp., E.—First Asst. to Neuro-surgical Dept.

Lowestoft Borough and Port Sanitary District.—M.O.H. and School M.O., £900.

Manchester, Ancoats Hosp.—H.S., at rate of £100.

Manchester, Booth Hall Hosp. for Children.—Deputy Med. Supt., £550.

***Manchester Ear Hosp.*—R.S.O. Hosp. registered for D.L.O. Salary £120 per annum.**

Manchester Royal Eye Hosp.—Jun. H.S., £120.

Manchester, St. Mary's Hosps.—Four H.S.'s, each at rate of £50.

Margate and District General Hosp.—Res. M.O., £150.

Nelson Hosp., Merton, S.W.—Res. H.S., at rate of £100.

Newcastle General Hosp.—H.S., at rate of £150.

Newcastle-upon-Tyne, Royal Victoria Infirmary.—Jun. Surg. Reg., £150.

Northampton General Hosp.—H.P., H.S.'s, and Cas. O., each at rate of £150.

Norwich City.—District M.O., £175.

Norwich, Norfolk and Norwich Hosp.—H.S. to Spec. Depts., £120–£160.

Nottingham City.—Res. Med. Supt. for City Hospital and M.O. for City Institution, £1000. Also Asst. M.O. for Maternity and Child Welfare Work, £500.

***Nottingham General Hosp.*—H.S. and H.P., each at rate of £150.**

Oldham Royal Infirmary.—Cas. O. and H.S. for Fracture Dept., at rate of £175.

Plymouth City General Hosp.—Jun. Asst. M.O., at rate of £250.

Preston and County of Lancaster Royal Infirmary.—H.S. to Eye, Ear, Nose, and Throat Dept., at rate of £150.

***Preston, Biddulph Grange Orthopædic Hosp.*—Jun. H.S., at rate of £200.**

***Princess Elizabeth of York Hosp. for Children, Shadwell, E.*—H.P., at rate of £125.**

Princess Louise Kensington Hosp. for Children, St. Quintin-avenue, W.—Hon. Radiologist. Also H.P., at rate of £120–£150.

Reading, Royal Berkshire Hosp.—H.S., Cas. O., and H.S. to Spec. Depts., each at rate of £125.

Royal Cancer Hosp., Fulham-road, S.W.—H.S. and H.S. to Radium Dept., each at rate of £100.

Royal College of Surgeons of England.—Examiners.

Royal National Orthopædic Hospital, 234, Great Portland-street, W.—Two H.S.'s, each at rate of £150.

Royal Northern Hosp., Holloway, N.—Surg. Reg., £300. H.S., at rate of £170. Also Consulting Physicist.

St. John's Hospital, Lewisham, S.E.—Hon. Asst. Surgeon. Hon. Asst. Ophth. Surgeon. Also Hon. Dermatologist.

St. Mary's Hosp. for Women and Children, Plaistow, E.—Hon. Asst. Gynæcologist.

***St. Peter's Hosp. for Stone, &c., Henrietta-street, W.C.*—H.S., at rate of £75.**

Salford Royal Hosp.—H.P., two H.S.'s, and Cas. H.S., each at rate of £125.

Sheffield City.—Police Surgeon, £1000.

Sheffield, Jessop Hosp. for Women.—H.S., at rate of £100.

South London Hosp. for Women, Clapham Common, S.W.—Sen. Clin. Asst. for Med. Out-patients.

Stafford, Staffordshire General Infirmary.—H.S., £200.

Staffordshire County Council.—Second Asst. Bacteriologist and Pathologist, £700.

Stoke-on-Trent, Burslem, Haywood, and Tunstall War Memorial Hosp.—Res. H.P., at rate of £150.

Surrey County Council.—Asst. M.O., £600.

Swansea County Borough Mental Hospital.—Deputy Med. Supt., £525.

Swansea General and Eye Hosp.—H.P., at rate of £150.

University of London.—S. A. Courtauld Chair of Anatomy, £1000.

Walsall General Hosp.—H.S., at rate of £150.

***Warrington Infirmary and Dispensary.*—Second and Third Residents, at rate of £175 and £150 respectively.**

Weir Hosp., Grove-road, Balham, S.W.—Jun. Res. M.O., £150.

West Bromwich and District General Hosp.—H.S., H.P., and Cas. H.S., each at rate of £200.

***West London Hosp., Hammersmith, W.*—H.P. and two H.S.'s, each at rate of £100.**

Westminster Hosp., Broad Sanctuary, S.W.—Asst. Med. Reg., at rate of £100.

Wimbledon Hosp., Thurstan-road, S.W.—Res. M.O., at rate of £150.

Worthing Hosp.—H.S. and H.P., each at rate of £130.

Wrexham and East Denbighshire War Memorial Hosp.—Two Res. H.S.'s, each at rate of £150.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Swinton (Lancashire), Sudbury (Suffolk), Chertsey (Surrey), and Staveley (Derbyshire).

Medical Referee under the Workmen's Compensation Act, 1925, for the Oban Sheriff Court District (Sheriffdom of Argyll). Applications should be addressed to the Private Secretary, Scottish Office, Whitehall, London, S.W.1, before March 24th.

NOTES, COMMENTS, AND ABSTRACTS

THE SAILOR LOOKS AT THE SURGEON

In an address delivered at the Royal Naval Hospital, Chatham, last November and published in the January issue of the *Journal of the Royal Naval Medical Service* Admiral Sir Edward Evans expressed admiration of the surgeons whom he has known and of the profession as a whole. He referred to Edward Wilson "whose name is a revered memory" and whose "knowledge of food values enabled us to get the best possible sledging rations for that long eighteen hundred mile sledge journey to the South Pole and back." Wilson was known to the expedition as "Uncle Bill" or "The Peacemaker," and Admiral Evans ended his tribute by quoting Scott's very moving letter to Mrs. Wilson in which Scott says of Wilson, "he died, as he lived, a brave, true man—the best of comrades and the staunchest of friends"—an enviable epitaph indeed. In the second part of his address, Admiral Evans dealt with the medical aspect of polar exploration from the point of view of a sailor-explorer. Exploring is an occupation for youngish men; from 27 to 35 seems to be the best all-round age, though the leader may be older. Men over 25 seem to stand the long sledge journeys better than their juniors. In selecting personnel, the medical officer may be invaluable. Temperament as well as physique must be considered and Wilson, with the help of Murray Levick and Atkinson, examined nearly 8000 volunteers for the Scott expedition. Provisions on board the ship or at the main base can obviously be more lavish than sledging rations which, on the Scott expedition, consisted of 34·4 oz. daily for each man, made up of 16 oz. of biscuit, 12 oz. of pemmican, 2 oz. each of butter, sugar, and eating chocolate, and 0·4 oz. of tea and cocoa. Sometimes this ration was supplemented by fresh pony meat, but a surfeit of this was apt to cause dysentery. Lice are mercifully unknown in the Antarctic—a matter for thankfulness when clothes can only be washed at the winter quarters and when it may be necessary to go as long as 150 days without washing, shaving, cutting the hair, or cleaning the teeth. Apart from frost-bite and snow blindness, chafe, a seemingly minor disability, may become a major handicap. Admiral Evans himself fell a victim to scurvy, which started with stiffening of the knee-joints so that he was unable to straighten his legs. Nevertheless he managed to stagger along for over 100 miles in this sorry plight till he finally fainted and dropped in his tracks on the ice. Thanks to the devotion of his companions he was rescued and treated so successfully that less than a year later he was fit enough to take command of the expedition on Scott's death. In comparing the great explorers he has known who continued "to strive, to seek, to find, and not to yield" with the medical profession, Admiral Evans paid it the highest compliment.

MEDICAL TREATMENT OF HEPATITIS AND CHOLECYSTITIS

Dr. ADAM MOSS (West Kirby) writes: "In the report of the discussion at the Liverpool Medical Institution, given in THE LANCET of Feb. 20th, I find no mention of the treatment of hepatitis and cholecystitis with vaccines. Twenty years ago I saw a young lady who suffered from frequent attacks of jaundice and fever. She had been seen by physicians in Manchester and Liverpool the burden of whose treatment was hexamine; which was given without effect. It struck me that the condition might be due to an infection of the gall-bladder, and that a vaccine might prove useful. As I did not know what the particular organism was, I injected ten minims of Parke Davis's Mixed Infection Phylacogen weekly for about 18 doses. The result was a complete cure, and since then I have treated all these cases in the same way and with almost complete success. A few years ago Sir David Wilkie published a paper in which he said that for the five preceding years he had sent all excised gall-bladders to the laboratory for culture. No organisms were found inside the gall-bladder, but in 75 per cent. the hæmolytic streptococcus was found in the wall. He concluded by saying: 'I do not know of any drug which is likely to reach this, perhaps a vaccine would.' I then found that the toxin of the hæmolytic streptococcus was one of the nine contained in the phylacogen."

FREE CONVALESCENT HOMES

DOCTORS who have worked through the recent influenza epidemic will undoubtedly have met with patients who would be greatly benefited by a period of convalescence away from their own homes, but who are prevented from going away by lack of means. It cannot be widely enough known that the Metropolitan Convalescent Institution exists to meet the needs of such patients. The Institution has homes for both sexes at Walton, near Weybridge, and Bexhill-on-Sea, and a home for children at Broadstairs. Much has recently been done to bring the buildings up to date, and more is contemplated as soon as funds permit. It should be emphasised that no charge whatsoever is made to the patients who are admitted by subscribers' letters and who receive concessions in the matter of railway fares. Further information may be had from the secretary at 14, Victoria-street, London, S.W.1.

COLOUR-BLINDNESS AND HÆMOPHILIA

SINCE colour-blindness and hæmophilia are sex-linked characters, the genes responsible for these defects should be carried in the same chromosomes and should show also partial linkage with one another. Such a relation was demonstrated by Dr. Julia Bell and Prof. J. B. S. Haldane, F.R.S., before the Royal Society on Feb. 25th in three of six families having both conditions. In these three all the hæmophilics were also colour-blind, while without exception their non-hæmophilic brothers had normal vision. Though in another family the linkage was doubtful, for two brothers were colour-blind but only one had hæmophilia, in the two remaining families it was the non-hæmophilics that were colour-blind. This was attributed to crossing-over of the genes. It was calculated from the frequency of crossing-over and of colour-blindness in the male population that the probability was very remote that sampling had caused the association attributed to linkage. Dr. Bell and Prof. Haldane also obtained further evidence for the view that hæmophilia originates by mutation.

ADVICE ON CHILDREN

THE number of books now being issued by doctors on the upbringing of children seems to be interminable. A recent addition [1] is one of a series in which "Commonsense" figures prominently in every title. It is perhaps unfortunate that Dr. Scott had confused common sense with chattiness. In a prefatory bed-time story all children are told to chew each bite "thirty-two times or more," which alone should be enough to frighten off the average parent who already finds children's meal-times tedious enough. A chapter devoted to the dangers of poisoning by deadly night-shade berries, on the other hand, will hardly frighten doctors, for few of them have heard of a case of this form of poisoning except from their old nannies. In brief, the book is not (as Dr. Scott would say) "our cup of tea." A smaller book,[2] which has an attractive frontispiece, is sponsored by the Associa-

[1] Your Child's Health: A Commonsense Guide. By Douglas Hay Scott, M.B., Ch.B. London: Frederick Muller Ltd. 1936. Pp. 204. 5s.

[2] The Care of Children from One to Five Years. By John Gibbens, M.A., M.B., M.R.C.P., Physician in Charge of the Children's Department, St. John's Hospital, Lewisham; Medical Officer to the Babies' Club, Chelsea. London: Association of Maternity and Child Welfare Centres. 1936. Pp. 126. 1s. 6d.

tion of Maternity and Child Welfare Centres. Dr. Gibbens is clearly attempting to deal with those problems on which the inexperienced parent needs advice, and if his views on such matters as child psychology are a trifle over-simplified and didactic, no great harm is done. We hope those wicked women who provide candied fruits and all manner of indigestible foods at children's parties, at whom Dr. Gibbens shakes such a terrifying fist, will be suitably humiliated. The book contains a surprising amount of information in small compass and deserves success.

A BEDSIDE BOOK

THE bedrooms of many conscientious buyers of "bedside" books must nowadays be so congested as to resemble public libraries; but the tired doctor might do worse than add to his collection a small book [1] in which Dr. Christopher Howard has set down his observations on some of the things encountered in the course of his work or read of during his leisure. Since his thoughts on any given theme occupy often less than a page of the book, it is not to be expected that they will always be very profound nor that his judgments will be particularly searching. Nevertheless, what he has to say is said with freshness and often with humour. When, in discussing modern methods of anæsthesia in childbirth, he says that "there are now women who do absolutely nothing for themselves except pass their own water" and that "it is doubtful if they would even do this were not repeated catheterisation a dangerous and a painful proceeding," it is to be hoped that he is talking only of parturient women. Dr. Howard's likes and dislikes are positive enough. Thus he approves of good food and drink and good cigars, whereas for contraception he has nothing but contempt. Dip into it where he will, the medical reader will find something to amuse him in this little book and little or nothing to irritate him.

A USEFUL MAGNIFIER

WE have received from Messrs. C. Baker (244, High Holborn, London, W.C.1) a new form of magnifier which should be found useful in laboratory work of many kinds. It consists of a four-inch convex meniscus mounted on a tripod with legs about 2½ in. long, which can be extended or unscrewed for packing flat. The lens gives a magnification of about 2½ times and has a flat field remarkably free from distortion. The tripod is wide enough to stand over a Petri dish, and there can be few bench occupations for which such a magnifier would not be helpful. More than that, it would be useful on the desk of any doctor, whose own crystalline lens is beginning to harden, for reading difficult print or small writing. The mount is a brass casting, heavily crystallined, and well adapted to withstand wear and tear. The price is 17*s.* 6*d.*

OBSTETRICAL NARCOSIS WITH EVIPAN

AT a meeting of the Danish Association for Gynæcology and Obstetrics last year, Dr. Ekkert Petersen gave an account of his experiences with Evipan in 100 consecutive confinements from the beginning of 1935 to the middle of October of the same year. Since then his experience in this field has grown considerably, but his analysis concerns his first 100 cases (*Hospitalstidende*, Dec. 8th, 1936, p. 19). There were 72 primiparæ and as a rule the duration of the narcosis was from 20–25 minutes. The proper timing of an injection was easiest in primiparæ. When it had been given too early, and the narcosis began to fail before the birth of the child, the original injection could be supplemented by another, smaller injection without any risk. The action of the evipan was prompt, and in only one case was pain complained of at the time of the child's birth, some 15 minutes after the injection. In most cases the narcosis continued for a little while after the child's birth, occasionally till after the delivery of the placenta. In the 16 cases in which tears of the perineum occurred—they were all small—the practice was adopted of suturing the wound before the delivery of the placenta in order to exploit what was left of the narcosis. Petersen has studied his material with special reference to certain features such as the labour pains and the amount of post-partum hæmorrhage. With regard to the former, both labour pains and abdominal pressure were satisfactorily maintained, only the first and occasionally the second labour pain following the injection being weakened. As for post-partum hæmorrhage and atony of the uterus, they seem to have been less than what is expected as a sequel to obstetrical chloroform narcosis. Only in one case was there retention of the placenta requiring Credé's manœuvre. In no case was acetonuria observed. None of the infants showed asphyxia or apnœa. In the comparison Petersen draws between obstetrical chloroform and evipan narcosis, his verdict is in favour of the latter.

NAVAL COOKERY

TIME was when the sea-cook was referred to derisively as "slushy" and to be called the son of a sea-cook signified contempt. The "Manual of Naval Cookery" now issued by H.M. Stationery Office at 3*s.* 6*d.*, proves that the status of sea-cooks has risen, and no modern sea-cook's child need be ashamed of his origin. This manual, 200 pages long, is a mine of information and includes chapters on spices, invalid cookery, breadmaking, on cooking in small quantities, and on cooking for a general mess. Whatever ichthyologists may say, it seems that, culinarily speaking, there are only three kinds of fish: the oily, the white, and the shell. The description of fresh fish almost sings itself "The eyes . . . are full and bright, the gills are a clear bright red." Stale fish, on the other hand, "are soft, the eyes are sunk in the sockets, their flesh pits on the slightest pressure, and is easily torn from the backbone." Clearly, the crier of stinking fish must expect short shrift from the sea-cook familiar with these physical signs. Eight pages are devoted to sauces; ten variations on the theme of White Standard Sauce are described and four on the Brown Standard, one of which, Devil Sauce, made by adding French mustard, Worcester sauce, and Cayenne pepper, should tickle the most jaded palate. So excellent a book might find an honoured place in other places besides the galleys of H.M. ships.

TREATMENT OF STREPTOCOCCAL INFECTIONS.—Referring to an annotation on p. 525 of last week's issue of THE LANCET, Messrs. Pharmaceutical Specialities (May and Baker) Ltd. point out that their antistreptococcal remedy Proseptasine differs from the preparations of *p*-aminobenzenesulphonamide which we mentioned, since it is the benzyl derivative (*p*-benzylaminobenzenesulphonamide) and in their experience is less toxic.

DISFIGUREMENT BY VACCINATION.—Major R. F. C. AUSTIN, R.A.M.C., retd., writes: "I have been asked by a young Oxford undergraduate to remove what he considers the disfiguring marks of three vaccinations performed in his childhood. Could any fellow practitioner tell me of a safe method of doing this?"

HORNSEY WELFARE CENTRE.—Sir Arthur MacNalty, the chief medical officer of the Ministry of Health, opened a new maternity and child welfare centre at Hornsey on March 1st. The reduction of infant mortality, he said, gave ground for hope that a corresponding advance might be made in protecting children in the next important stage of life—the "toddler" stage. He emphasised the value of continuity of medical supervision, before and after school age was reached, and the need for coöperation between the maternity and child welfare service and the school medical service.

[1] Physic and Fancy. By Christopher Howard. London: Hutchinson and Co., Ltd. Pp. 155. 6*s.*